

X-ray Monitoring of η Carinae: Variations on a Theme

M. F. Corcoran^{1,2}

ABSTRACT

We present monitoring observations by the Rossi X-ray Timing Explorer of the 2–10 keV X-ray emission from the supermassive star η Carinae from 1996 through late 2003. These data cover more than one of the stellar variability cycles in temporal detail and include especially detailed monitoring through two X-ray minima. We compare the current X-ray minimum which began on June 29, 2003 to the previous X-ray minimum which began on December 15, 1997, and refine the X-ray period to 2024 days. We examine the variations in the X-ray spectrum with phase and with time, and also refine our understanding of the X-ray “peaks” which have a quasi-period of 84 days, with significant variation. Cycle-to-cycle differences are seen in the level of X-ray intensity and in the detailed variations of the X-ray flux on the rise to maximum just prior to the X-ray minimum. Despite these differences the similarities between the decline to minimum, the duration of the minimum, and correlated variations of the X-ray flux and other measures throughout the electromagnetic spectrum leave little doubt that the X-ray variation is strictly periodic and produced by orbital motion as the wind from η Carinae collides with the wind of an otherwise unseen companion.

Subject headings: Stars: individual (η Carinae) — stars: early-type — binaries: general — X-rays: stars

1. Introduction

The supermassive star η Carinae (Davidson & Humphreys 1997) is a key object in our understanding of the formation and evolution of extremely massive stars. A key piece of

¹Universities Space Research Association, 7501 Forbes Blvd, Ste 206, Seabrook, MD 20706

²Laboratory for High Energy Astrophysics, Goddard Space Flight Center, Greenbelt MD 20771

observational evidence concerning the nature of this object was the identification of periodic variations in the near-IR (Damineli 1996; Whitelock et al. 1994) stable over many decades, along with correlated variability in X-ray (Corcoran et al. 1995) and radio (Duncan et al. 1995) bands. This variability has especially dramatic effect in the 2–10 keV X-ray band, where the spatially unresolved X-ray emission drops by about a factor of 100 for ~ 3 months, as monitoring observations with the Rossi X-ray Timing Explorer (*RXTE*) during the X-ray minimum of 1997–1998 showed (Ishibashi et al. 1999). The variable X-ray emission is believed to arise in a shocked region where the wind from η Carinae collides with the wind from an otherwise unseen (or not yet seen) companion star. This colliding-wind binary model has been shown to reproduce the gross variations of the X-ray lightcurve (Pittard et al. 1998; Ishibashi et al. 1999; Corcoran et al. 2001a; Pittard & Corcoran 2002). Even though the X-ray luminosity is an extremely small fraction of the bolometric luminosity ($L_x/L_{bol} \sim 10^{-7}$), the observed X-ray variations are extremely important in disentangling this system since the source of the X-ray emission is spatially compact, and since the hard X-ray emission is little effected by circumstellar absorption or re-emission from the Homunculus nebula. The emission in no other wavelength region can be so qualified.

Published models of the X-ray variation show significant discrepancies between the expected and observed variation (Pittard et al. 1998; Ishibashi et al. 1997; Corcoran et al. 2001a; Pittard & Corcoran 2002) which may indicate either the importance of the orbital motion of the stars on the wind structure, or perhaps indicates the enhancement of mass loss from η Carinae due to some interaction with the companion near periastron, or uncertainties in the orbital orientation, or some combination of these effects. Additionally, short-term variations (“flares” or “spikes”, Ishibashi et al. 1997; Corcoran et al. 1997; Ishibashi et al. 1999) have been observed whose origin is not clear. Secular changes in the underlying wind properties of either η Carinae or the companion star (which may reflect changes in the physical conditions of either or both stars) may be reflected in cycle-to-cycle variations in the X-ray emission. Thus continued monitoring of the X-ray emission from η Carinae is vital.

In this paper we present the results of our continued (and continuing) monitoring of the η Carinae system with *RXTE*. We present new data obtained since our previous publication (Ishibashi et al. 1999; Corcoran et al. 2001a), and emphasize a comparison of the X-ray brightness from the last X-ray minimum in mid-2003 with the behavior near the first minimum observed with *RXTE* in late 1997.

2. The *RXTE* Observations

The *RXTE* observations are typically between 1000-2000 seconds in duration and are usually obtained a few times per month. During the year before the most recent X-ray minimum (which occurred in mid-2003) daily X-ray observations were obtained. This is a higher observing frequency than was obtained prior to the 1997-1998 minimum, in which we obtained approximately weekly observations prior to the minimum, with daily observations only after the beginning of the X-ray minimum. Obtaining daily observations prior to the X-ray minimum was important, since we saw very rapid changes in brightness during this timeframe. These brightness variations were temporally resolved with daily observations, but under-resolved in the \sim weekly observations obtained in 1997.

We use data obtained by the *RXTE* Proportional Counter Array (PCA) and consider only data obtained in layer 1 of the proportional counter units (PCUs), since layer 1 provides the highest signal-to-noise for a relatively soft ($E < 10$ keV) source like η Carinae. Due to the loss of the PCU0 propane layer on May 12, 2000, there is additional noise in the apparent X-ray rate in this PCU; additionally, without the propane layer, *RXTE* electron screening criteria is undefined, resulting in additional noise in the reduced PCU0 layer 1 data. Both effects cause a large scatter in the gross PCU0 layer 1 rates, making PCU0 observations after May 12, 2000 difficult to interpret. In the following analysis we ignore PCU0 observations after this date.

Data extraction, and instrumental background correction, are as described in Ishibashi et al. (1999). One improvement is that we use corrected PCU2 faint background models to calculate the net rates. These new background files were necessary to correct for changes in the background models which resulted in an oversubtraction of instrumental background for observations obtained late in the *RXTE* gain epochs¹. For each observation, data in 16 second bins were extracted from layer 1 for right and left anode chains for each PCU. Instrumental background event files for each observation were constructed using appropriate instrumental model backgrounds, and instrumental background lightcurves were extracted from the model background event files again using 16 second time bins. We calculated net count rates for each data bin by subtracting the background data from the observed gross data. Since casual inspection of the 16-second lightcurves showed no significant variations within any observation, to increase signal-to-noise we calculated average net rates and errors for each observation. This provides the average PCU count rate of η Carinae (and sources nearby which fall within the $\sim 45'$ field of view of each PCU) for each observation.

¹see http://heasarc.gsfc.nasa.gov/docs/xte/pca_news.html

Most of the early data were obtained using 3 proportional counter units (PCUs). There were a total of 976 *RXTE* observations of η Carinae between 1996-02-09 and 2004-11-02, an average of one observation every 3.3 days. Nearly all PCUs were switched off for at least some of the observations. PCU1 was switched off 613 times; PCU3 was switched off 450 times; PCU4 was switched off 737 times. The best coverage was obtained by PCU0 and PCU2, which have observed η Carinae nearly every time *RXTE* pointed at the star; PCU2 was switched off only once, on 2000-10-06, while PCU0 was switched off six times, on 1998-03-21, 1998-03-22, 1998-03-23, 2000-05-15, 2000-10-06, and 2003-11-21. The PCU2 data provide the most reliable coverage of η Carinae's X-ray variability of the 5 PCUs. The observed PCU rates, corrected for estimated instrumental background, are shown in figure 1.

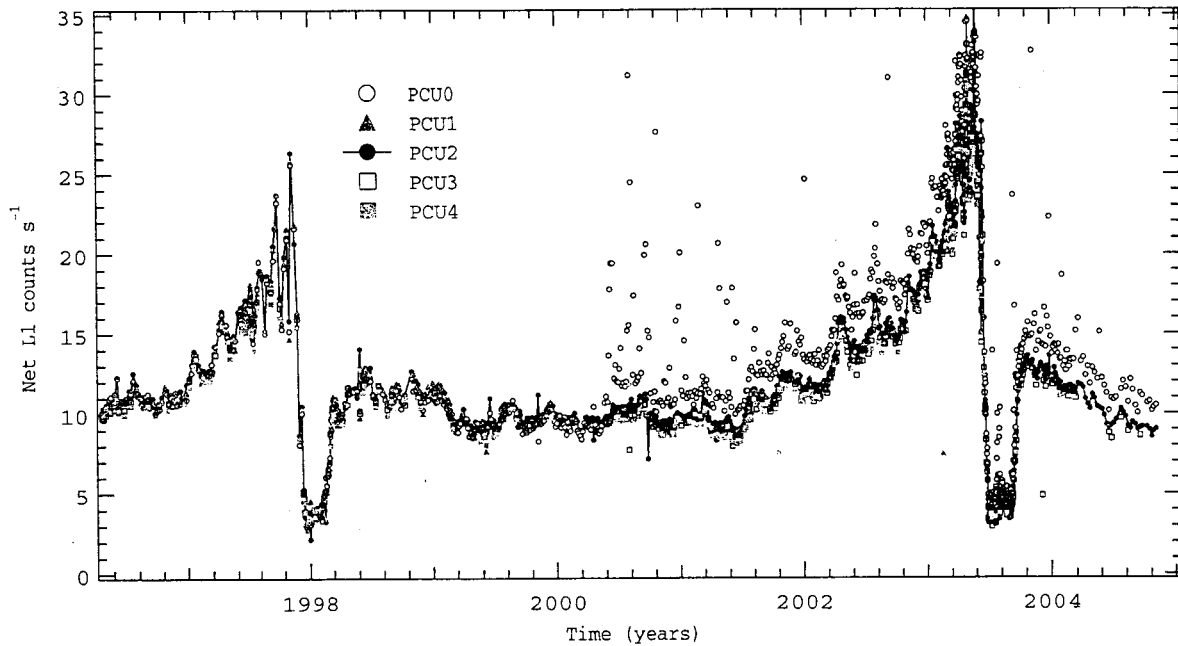


Fig. 1.— Observed Layer 1 rates for PCU0-4, corrected for instrumental background. The discrepancies between the PCU0 rates and the rates from the other PCUs is due to the loss of the PCU0 propane layer in May 2000.

3. The X-ray Lightcurve

3.1. Calibration

We converted the average, instrument-background-corrected count rates to fluxes by comparing the *RXTE* count rates with 2–10 keV X-ray fluxes for η Carinae directly measured by contemporaneous observations with imaging X-ray spectrometers. In addition to using observations with the *ASCA* X-ray observatory as was done in Corcoran et al. (2001a), here we also include spatially-resolved data from the *BeppoSAX*, *CHANDRA* and *XMM* observatories as well, to cover a wider range in X-ray flux. Table 1 shows the measured fluxes from the imaging satellites and the corresponding *RXTE* rates. The *ASCA* fluxes are taken from Corcoran et al. (2000), while the *BeppoSAX* fluxes are from Viotti et al. (2002). Detailed descriptions of the derivation of the *CHANDRA* and *XMM* fluxes will be given elsewhere. The fluxes are corrected for instrumental and sky background, but there is no correction for foreground absorption. The flux-count rate relation and our linear fits are shown in figure 2. The conversion from *RXTE* net count rates to flux for each of the 5 PCUs are:

$$\text{PCU0: flux (2–10 keV)} = 7.11 \times 10^{-12} (\text{Net Rate} - 2.34) \text{ ergs s}^{-1} \text{ cm}^{-2}$$

$$\text{PCU1: flux (2–10 keV)} = 7.92 \times 10^{-12} (\text{Net Rate} - 2.44) \text{ ergs s}^{-1} \text{ cm}^{-2}$$

$$\text{PCU2: flux (2–10 keV)} = 8.38 \times 10^{-12} (\text{Net Rate} - 3.03) \text{ ergs s}^{-1} \text{ cm}^{-2}$$

$$\text{PCU3: flux (2–10 keV)} = 8.73 \times 10^{-12} (\text{Net Rate} - 2.79) \text{ ergs s}^{-1} \text{ cm}^{-2}$$

$$\text{PCU4: flux (2–10 keV)} = 8.85 \times 10^{-12} (\text{Net Rate} - 2.94) \text{ ergs s}^{-1} \text{ cm}^{-2}$$

The tabulated fluxes for all the *RXTE* observations through November 2, 2004 are given in Table 2. Fluxes calculated with the above scalings are shown in figure 3 for all PCUs. Table 2 also gives the “PCA” layer 1 2 – 10 keV fluxes derived by averaging fluxes from all operating PCUs (although PCU0 measures after May 1, 2000 were excluded to avoid high-background observations after the loss of the propane layer). We excluded from Table 2 an observation on September 24, 2000 when the PCU2 observation was anomalously low, and the only other available datum was a noisy one from PCU0.

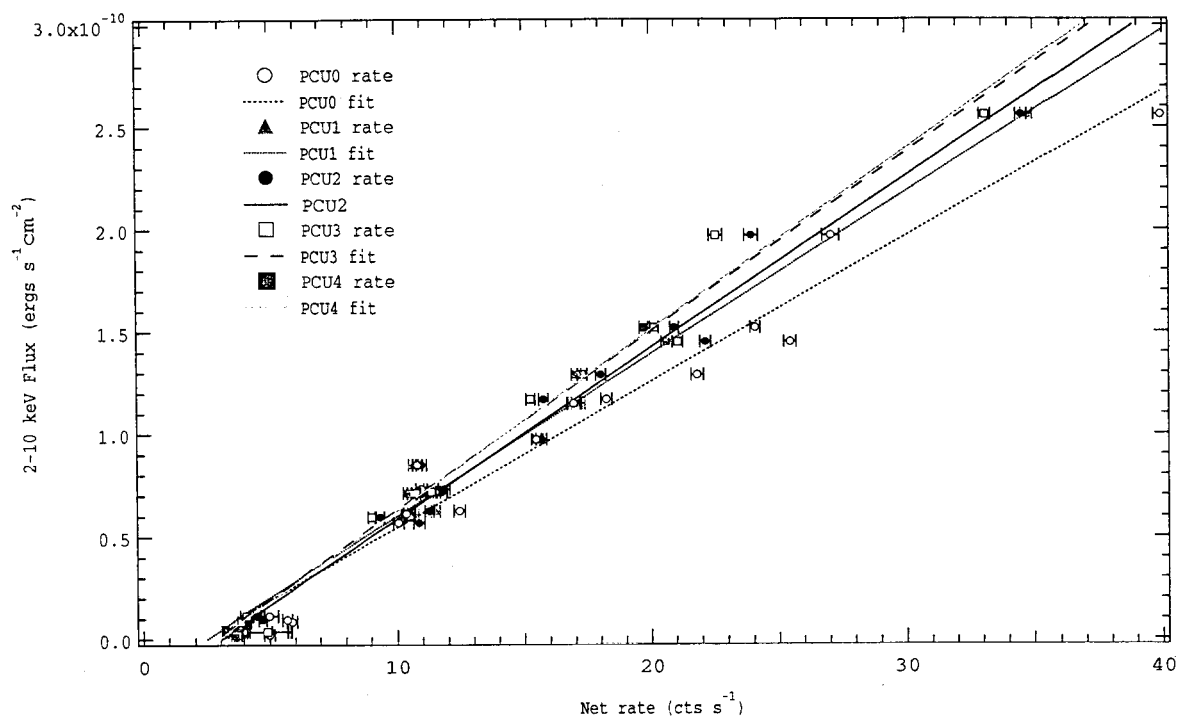


Fig. 2.— Linear fits to the instrumental-background-corrected PCU rates and fluxes directly measured from contemporaneous imaging X-ray spectrography.

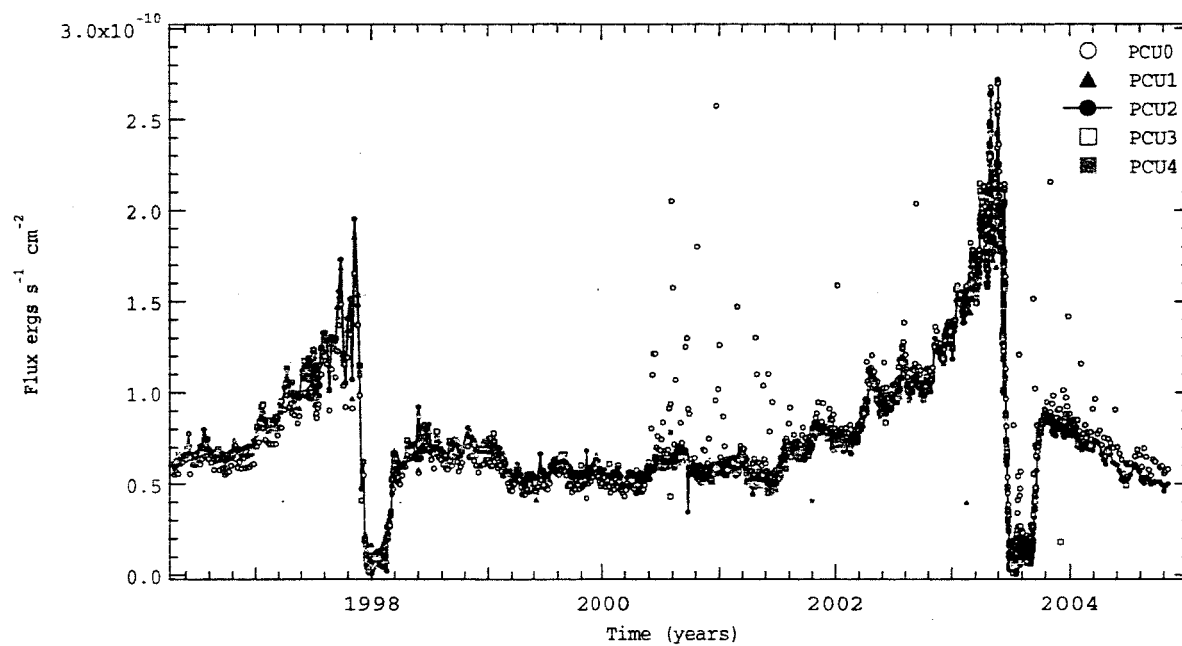


Fig. 3.— Scaled layer 1 fluxes for PCU0-4, corrected for instrumental and estimated sky background.

3.2. The X-ray Ephemeris

Inspection of the 1997–1998 and 2003 PCA lightcurve shows that the X-ray minimum begins at a flux level of about 6×10^{-12} ergs s $^{-1}$ cm $^{-2}$. This flux level was achieved on JD 2,450,799.792 and again on JD 2,452,819.667, an interval of 2019.875 days. Thus the interval between the start of X-ray minima is 2019.8 ± 0.62 days, where the uncertainty on this interval is estimated from the time between consecutive observations at the start of the minima.

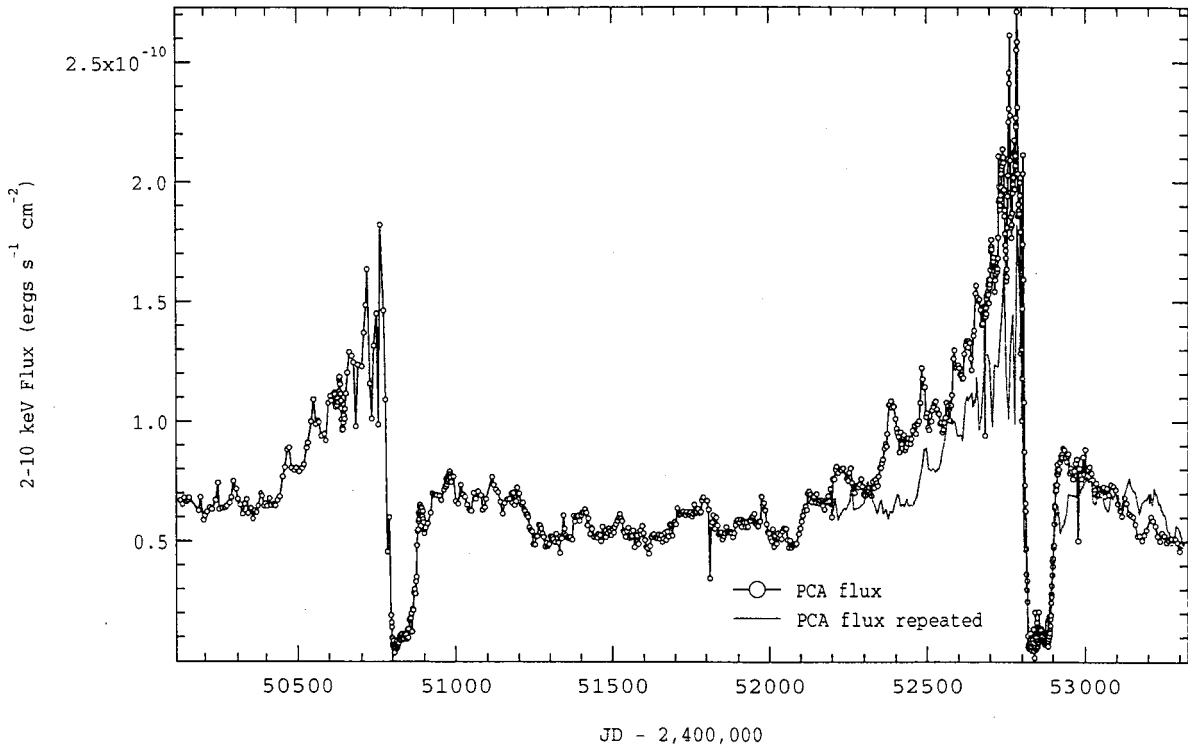


Fig. 4.— Scaled layer 1 PCA fluxes, corrected for instrumental and estimated sky background. The flux is repeated assuming a period of 2024 days.

We tried to refine the period between X-ray minima via epoch folding, by looking for the minimum of the statistic $g = \sum_{\phi=0.95}^{1.10} (f_{\phi} - f_{\phi-1})^2$ where f_{ϕ} is the PCA flux at a given phase, $f_{\phi-1}$ is the PCA flux at the same phase in the previous cycle, and phases ϕ are calculated with test periods in the range 2000–2050 days. We linearly interpolated the observations in the range $-0.05 < \phi < 0.10$ to the more frequent sampling of the observations in the later phase range. The minimum of g was reached for a period of 2024 days. This is significantly

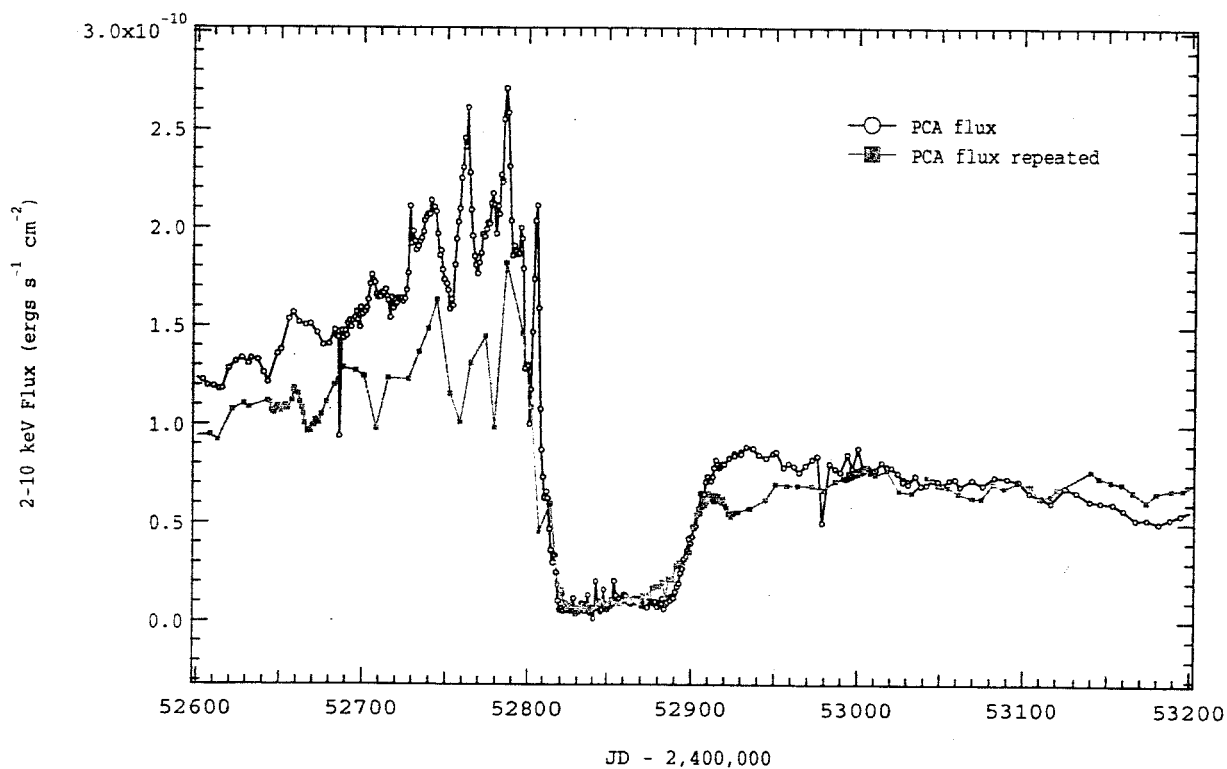


Fig. 5.— Same as Figure 4, emphasizing the variation around the X-ray minima. Again a period of 2024 days is used.

larger than the period derived above from simple inspection of the start of the minimum. This longer period gives a better match to the decline to minimum and to the egress from minimum and we adopt this as the true X-ray cycle period. Times of X-ray minima are given by:

$$JD(\text{X-ray minimum}) = 2,450,799.792 + (2024 \pm 2)E \quad (1)$$

where E is the cycle count. Figure 4 shows the 2 – 10 keV layer 1 PCA lightcurve versus time, with the PCA lightcurve repeated using the above period. Figure 5 emphasizes the variations around the X-ray minima. The quoted uncertainty is estimated by matching the decline to minimum and the rise from minimum in the two minima observed by *RXTE*. Part of the uncertainty arises due to the large variation in the X-ray flux just prior to the start of the 2003 X-ray minimum.

We estimated the duration of the X-ray minimum from the full width half minimum, taken to be the width of the minimum at the point where the flux is midway between the minimum flux level and the peak level seen just after the end of the eclipse. With this definition, the duration of the 1997-1998 minimum is 81.2 days, while the duration of the 2003 minimum is 89.0 days. As can be seen in figure 5, the width of the eclipse in the two cycles are in good agreement for most of the minimum. The longer duration of the 2003 minimum is mainly due to the higher flux of the peak after the 2003 minimum, and because the peak occurred 113 days after the start of the X-ray minimum, compared to the peak after the 1998 minimum, which occurred only 86 days after the minimum began.

4. Color Variations

Each PCU provides coarse measurements of the X-ray spectrum during each observation. A typical PCU2 Layer 1 spectrum is shown in figure 6. For each observation, we extracted net spectra (corrected for instrumental background) in the PCA band (roughly 2 – 60 keV), and created photon redistribution matrices for the spectra to take into account variations in the relation between PCU channels and photon energy for different PCA gains. We restricted ourselves to PCU2 observations since these form the most homogeneous dataset. We linearized each spectrum to a common energy scale, and extracted instrument-background-corrected lightcurves in a soft band (2 – 5 keV) and a hard band (7 – 10 keV). The soft band is sensitive to changes in absorbing column while the hard band is sensitive to the emission measure of the hottest gas. Figure 7 compares the variation in the soft and hard bands. There are significant differences in the variability seen in the soft vs. hard band: the recovery from the X-ray minimum is significantly slower in the soft band than in the hard band, and the soft band is brighter than the hard band for most of the cycle except for

times around the X-ray minima.

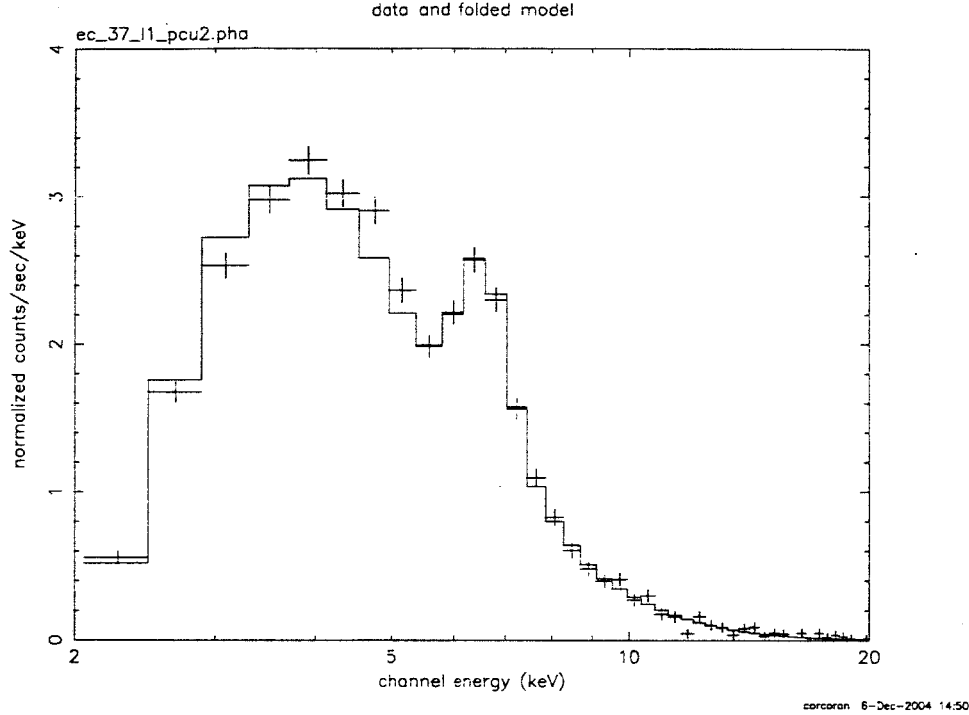


Fig. 6.— A typical PCU2 layer 1 spectrum of η Carinae, obtained on July 7, 2002. The histogram shows a 3 component thermal model fit.

We also constructed a hardness ratio curve (Figure 8), where hardness ratio is defined as $hr = (hard - soft)/(hard + soft)$ and the hard and soft bands are defined above. Figure 9 compares the variation in hardness around the X-ray minima. Unlike the variation in flux around the X-ray minimum, the hardness ratio shows a rather symmetric variation before and after the minimum. The maximum in hardness ratio before and after the minima are nearly the same in the two cycles, and the day-to-day change in hardness around the minimum are very similar in the two minima.

Figure 10 compares the hardness ratio changes around the X-ray minima to the variation in X-ray flux seen by the PCA. There is a significant increase in spectral hardness after the end of the X-ray minimum. There is also an apparent correlation between some of the strong X-ray flux “spikes” seen just prior to the X-ray minimum and spikes in the hardness ratio curve. The minimum in spectral hardness during the X-ray flux minimum is mainly produced by contamination of the X-ray spectrum by other sources of emission within the field of view of the PCA and should not be interpreted as a real softening of η Carinae’s X-ray spectrum. Interestingly, however, the hardness of the source appears to increase during the middle of

the X-ray minimum. This behavior should be interpreted with caution, since the *RXTE* spectrum of η Carinae is dominated by uncertainties in the instrument and sky backgrounds during the X-ray minimum; however the mid-eclipse hardening was seen during both X-ray minima, suggesting that this may be a real effect associated with η Carinae.

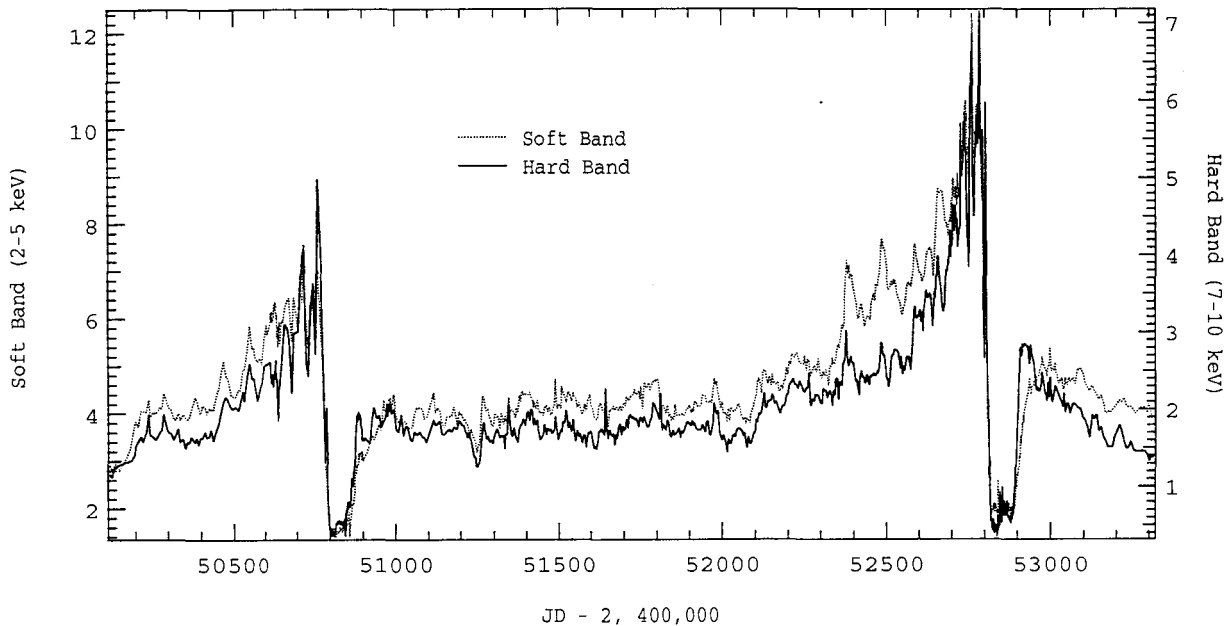


Fig. 7.— Comparison of the PCU2 layer 1 2–5 keV count rate lightcurve to the lightcurve in the 7–10 keV band. Both lightcurves are corrected for estimates of instrumental background.

5. Transient Behavior

As noted by Ishibashi et al. (1997) and Corcoran et al. (1997), and as can be seen in Figure 4, the X-ray emission from η Carinae exhibits transient increases in brightness. These peaks vary in intensity, duration, and in the interval between adjacent peaks. We have identified peaks by eye in figure 11, and have calculated the interpeak intervals for all identified peaks. These intervals (defined as the interval from one flare to the previous one) are shown as filled circles. The average peak-to-peak interval is 56.6 days. There appears to be significant variation of the interpeak interval with phase. The interpeak interval grows shorter just prior to the X-ray minima, an effect seen in both 1997 and 2003. There may be a lengthening of the interpeak interval midway between the minima, though admittedly these peak timings are difficult to measure reliably because the peaks are so weak. The amplitude

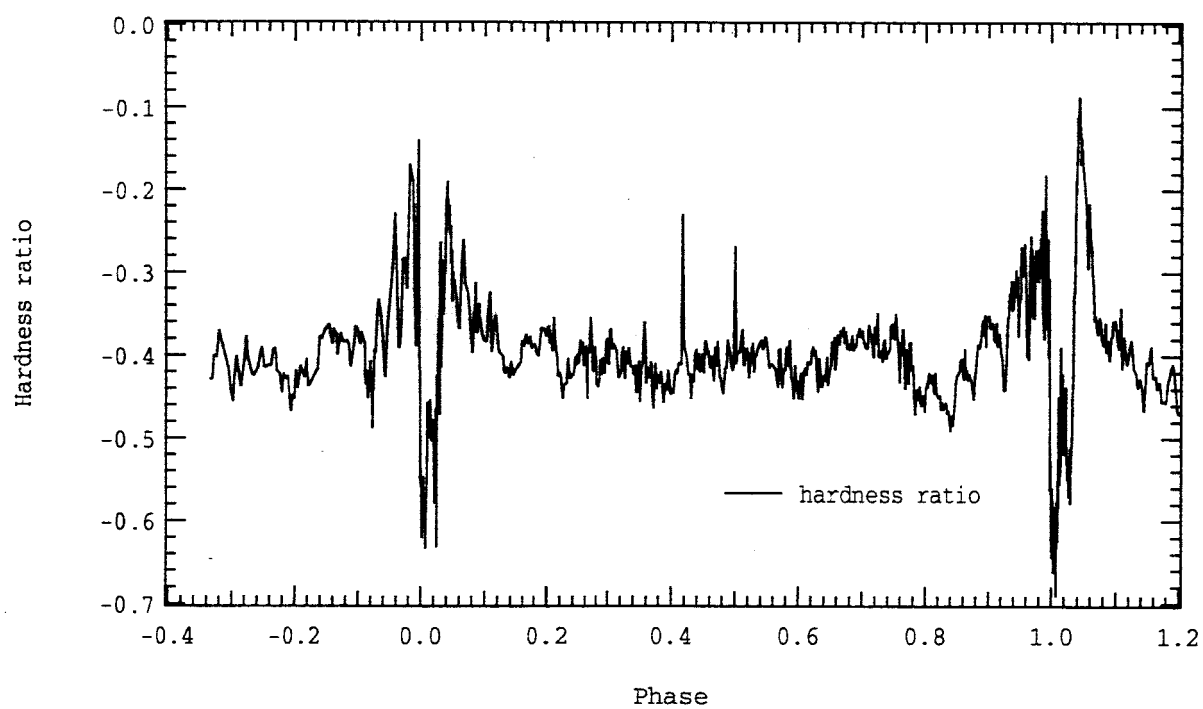


Fig. 8.— Hardness ratio variation; $hr = (high - low)/(low + high)$, where *high* is the net count rate in the 7 – 10 keV band and *low* the net count rate in the 2 – 5 keV band.

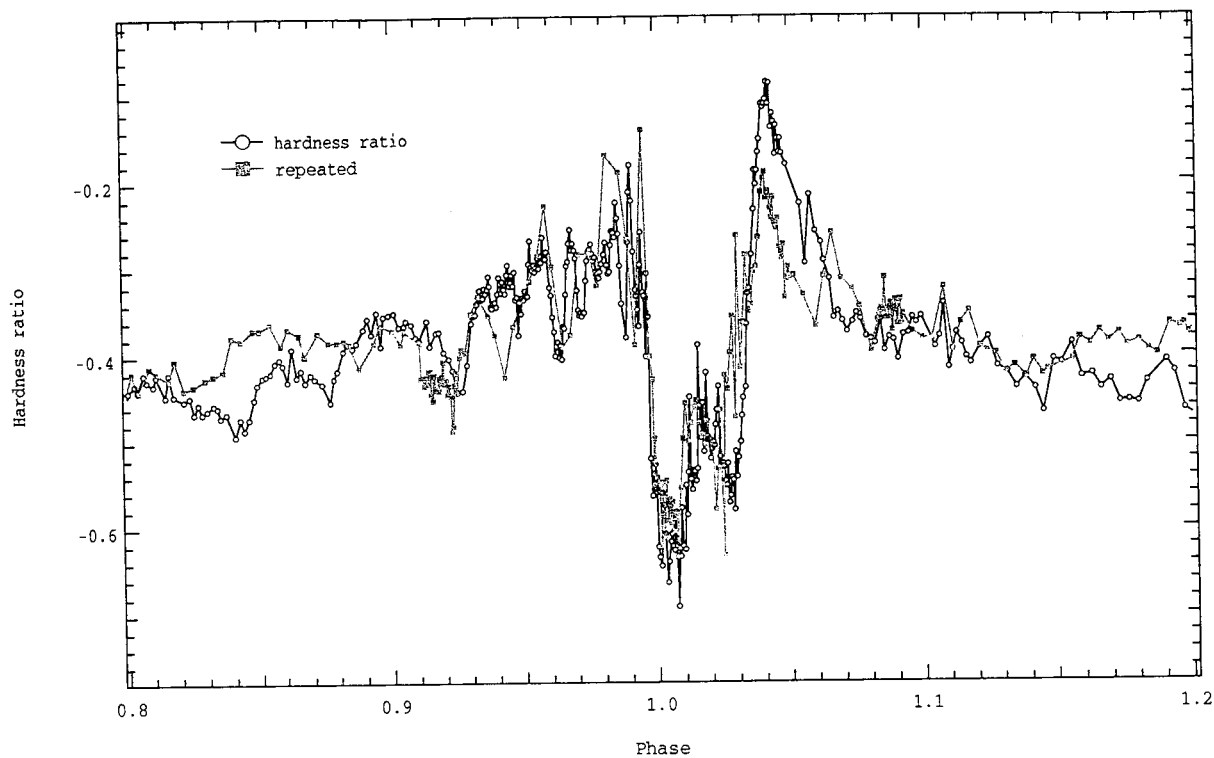


Fig. 9.— Hardness ratio variation, emphasizing the variation around the X-ray minima. $hr = (high - low)/(low + high)$, where *high* is the net count rate in the 7 – 10 keV band and *low* the net count rate in the 2 – 5 keV band.

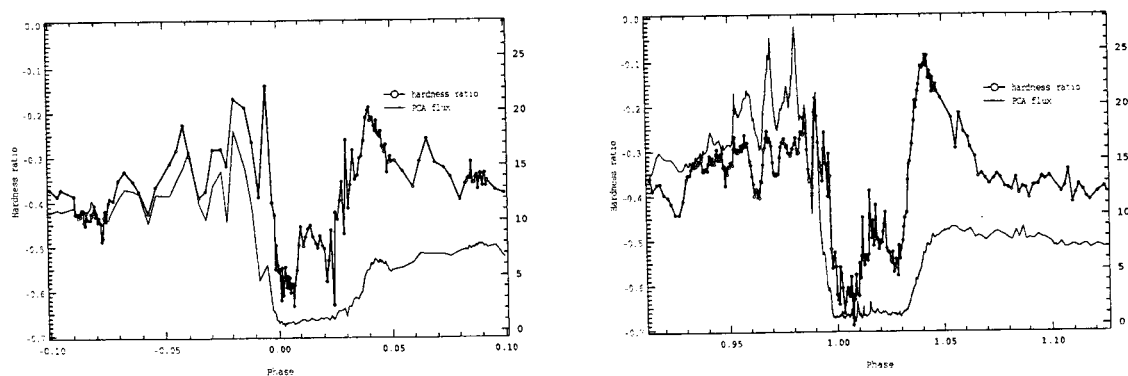


Fig. 10.— Hardness ratio variation compared to the flux variation. *Left*: The 1998 minimum. *Right*: The 2003 minimum. In each case, X-ray peaks are associated with X-ray spectral hardening.

of the peaks relative to the interpeak brightness also changes with cycle phase. The peak amplitudes are very high just prior to the X-ray minima and very low in the times between minima.

Ishibashi et al. (1999) showed that some peaks occur rather regularly with a quasi-period of 84.8 days. We plotted times of expected X-ray peaks according to this period on Figure 11 as crosses. There is fairly good correlation between these times and observed X-ray peaks, though not all peaks occur at these calculated times. In addition the correlation becomes poorer for times after those analyzed by Ishibashi et al. (1999); in particular the correlation is rather poor for the strong peaks just prior to the 2003 X-ray minimum, as shown in figure 12, and for the weaker peaks following the X-ray minimum. For comparison, we re-calculated peak times using a period of 84.333 days, which is commensurate with the 2024 day period of the X-ray minima. Expected peak times calculated with this 84.333 day period are marked by long tickmarks in figure 11 and 12. These calculated peak times correlate well with observed peak times in the early part of the lightcurve, and also give a somewhat better match to the peaks seen near the later X-ray minimum.

6. Cycle-to-Cycle Comparison

As can be seen in figures 4 and 5, there are significant differences between the 2–10 keV fluxes at the same phases in consecutive cycles. η Carinae was significantly brighter in the phase interval $0.7 < \phi < 1.0$ compared to the corresponding interval in the previous cycle. During the most recent cycle η Carinae continued brighter in X-rays after the minimum up to $\Delta\phi = 0.1$. However, starting at about $\phi = 2.09$ its 2–10 keV flux became once again comparable to its flux at the same phase in the previous cycle. The brightness has continued to drop², so that, starting on 2004-04-21 and up to the time of this writing, η Carinae is currently fainter than it was at the same phase in the previous cycle.

The difference between the hardness ratio variation in the two cycles seems somewhat less than the variation of the X-ray flux. In particular the change in hardness ratio prior to the X-ray minima is nearly the same in cycle 0 and cycle 1. However, while the hardness ratio prior to the 2003 minimum is remarkably similar to that prior to the 1998 minimum, there are significant differences in hardness ratio after the minimum.

In both cycles there's good evidence of spectral hardening around the times of X-ray

²see http://lhea-www.gsfc.nasa.gov/users/corcoran/eta.car/etacar_rxte_lightcurve/ for the most recent *RXTE* data.

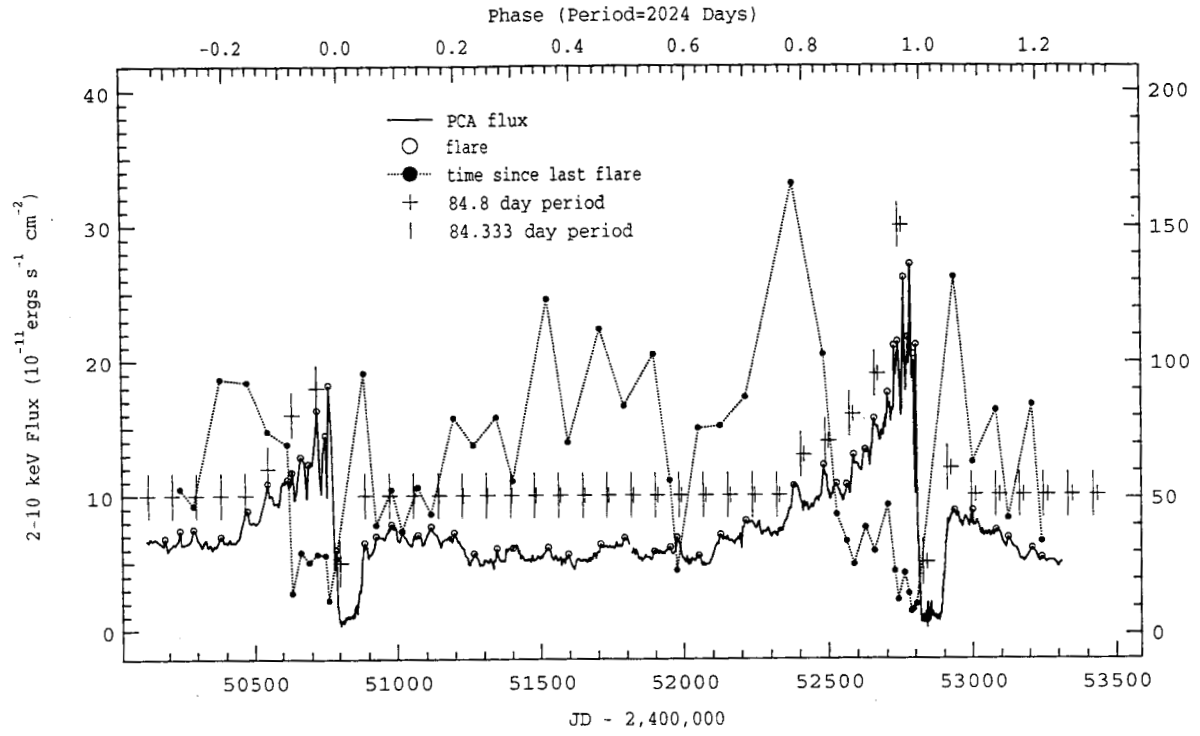


Fig. 11.— The PCA lightcurve with identified X-ray peaks marked by open circles. The filled circles show the times between flares. The peak times according to the period of Ishibashi et al. (1999) are marked by crosses. Expected peak times calculated with a period of 84.333 days are marked by long tickmarks.

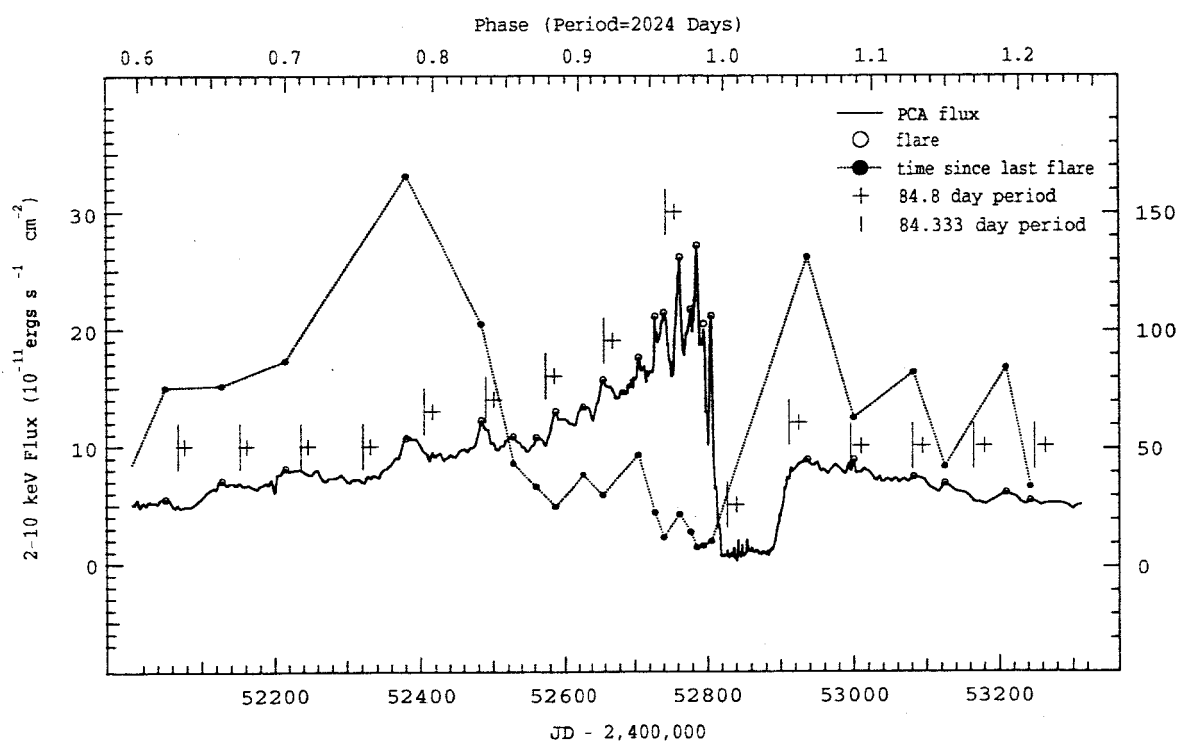


Fig. 12.— Same as Figure 11, emphasizing the 2003 X-ray minimum.

intensity peaks. In addition, during each cycle the interpeak interval seems to decline on approach to the X-ray minimum, reaching a value of about 12 days just before the X-ray minimum begins.

7. Discussion

Despite some detailed differences from cycle-to-cycle, the overall behavior of the X-ray emission seems remarkably consistent between the 1998 and 2003 minima. Particularly striking is the rapid decline from the X-ray maximum to X-ray minimum seen during both minima, and the consistent shape and duration of each minima. The repeatability of the X-ray minima along with correlated changes in other wavebands (Steiner & Damineli 2004; Whitelock, Feast, Marang, & Breedt 2004; Smith, Morse, Collins, & Gull 2004; Martin & Koppelman 2004; van Genderen & Sterken 2004; Fernandez Lajus et al. 2003), leave little doubt that the phenomenon is strictly periodic and is produced by a gravitational clock, i.e. orbital motion in a binary system where the X-ray emission is from shocked gas produced by the collision of the wind of η Carinae with that of the companion. With this acknowledgement we need to understand the detailed behavior of the system exhibited by the X-ray radiometry in order to fully understand how the winds interact and ultimately determine the physical conditions of both stars as a function of time. While the stellar behavior can only be fully understood in the context of the multi-wavelength data, we can still draw some conclusions solely from the X-ray data.

The differences in X-ray brightness between the 1998 and 2003 events is probably produced by an enhancement of the local density at the shock boundary. This implies that the wind density (or densities) at a given distance from the star varies with time. Such an enhancement in density suggests an enhancement in wind mass loss rate from one or both stars. An increase in the mass loss rate from η Carinae would push the shock front into the denser part of the companion's wind, resulting in increased emission measure, while an increase in the companion's wind would provide a direct increase in the density of the shock, and its emission measure. Given the brightening of η Carinae seen in the optical and IR (Davidson et al. 1999; Sterken, Freyhammer, Arentoft, & van Genderen 1999; van Genderen, Sterken, de Groot, & Burki 1999; Whitelock et al. 1994) it may be reasonable to attribute any variation in the X-ray brightness to variations in η Carinae itself, so that perhaps the variation in the X-ray brightness indicates changes in η Carinae's mass loss rate, perhaps driven by variations in the star's photospheric luminosity. However while the optical and IR lightcurves show long-term increases, our η Carinae observations showed a secular increase, recent observations show a decline in X-ray brightness. But the brightness of η Carinae at

optical and IR wavelengths is complicated by absorption and re-radiation of photospheric emission by local dust, and it may be that a secular decrease in the local dust (due to expansion of the Homunculus nebula which surrounds η Carinae, or perhaps due to real destruction of the dust) contributes substantially to the observed long-term brightening of the optical and IR emission. As mentioned previously, dust plays little role in understanding the X-ray emission, at least at sufficiently high energies.

One of the most unusual results of these *RXTE* observations is the behavior of the spectral shape with time. It's important to note that the X-ray emission hardens considerably approaching the minimum, and declines dramatically after the minimum. This indicates that the source is highly absorbed, even after the X-ray flux recovers. This is in agreement with an observation of unusually large absorption seen in the the X-ray spectrum by *BeppoSAX* (Viotti et al. 2002). The *RXTE* hardness curve suggests that the enhanced absorption lasts for about 58 days after the X-ray brightness recovers from the minimum, indicative of a buildup of material between the observer and the X-ray source. This could be due to some sort of phase-dependent mass loss enhancement (as suggested by Corcoran et al. 2001a), or perhaps due to a disturbance in the wind produced by the passage of the companion star around η Carinae, or some combination of these effects.

While the nature of the short-term X-ray intensity peaks is still not understood, we have some new clues from the new *RXTE* data since the last minimum. Some of the peaks seem to recur periodically, or quasi-periodically, but the period given by Ishibashi et al. (1999) is slightly too long to match the peaks near the 2003 minimum. We find a better correspondence using a period of 84.333 days, which interestingly enough is commensurate with the orbital period of the system of 2024 days. It's also interesting that using this period, the start of the X-ray minima corresponds to a predicted intensity maximum. Another characteristic is that the intensity peaks also correspond fairly well to peaks in hardness ratio. This means that the intensity peaks are not caused by decreases in intervening absorption, but rather represent real increases in the amount of X-ray emitting material. These variations probably suggest a highly structured wind around η Carinae, though detailed modeling of the nature of these variations is beyond the scope of this paper.

8. Conclusions

We present here X-ray observations of η Carinae from the *RXTE* observatory during the interval February 8, 1996 to November 2, 2004, inclusive. These observations have shown:

- The X-ray minimum which occurred on JD 2,450,799.792 (December 16, 1997) recurred

on JD 2,452,819.667 (June 29, 2003). A period of 2024 days fits the start and end of the minima, and we believe this represents the orbital period of a companion star around η Carinae.

- These observations show significant changes in X-ray brightness: a secular brightening prior to the 2003 minimum, and a secular fading about 2 months after the end of the minimum.
- Significant variations in spectral hardness were seen, suggesting a buildup of absorbing material prior to the X-ray minimum and a decline in absorption after the minimum. The interval of increased hardness lasts much longer than the X-ray minimum.
- A period of 84.333 days seems to describe the times of X-ray intensity peaks better than the longer period of Ishibashi et al. (1999), at least for times near the X-ray minimum in 2003. This period is commensurate with the orbital period. The X-ray peaks are associated with a hardening of the spectrum and thus are not due to a decrease in absorption between the observer and the X-ray emitting region.

Continued monitoring of the 2 – 10 keV flux will help clarify these conclusions and help resolve the current mystery of the secular variations in η Carinae's X-ray flux that *RXTE* revealed. Unfortunately current plans make it unlikely that *RXTE* will be able to monitor η Carinae's flux through the 2009 minimum. We hope to continue monitoring η Carinae with *RXTE* as long as the observatory is available.

There have been many people who have contributed to this work directly or indirectly, and unfortunately it's impossible to thank them all. I'd like to acknowledge the help of Jean Swank and the *RXTE* Guest Observer Facility, for supporting this campaign for so long, and especially Evan Smith for doing a great job scheduling the observations. I'd like to thank Augusto Damineli, Bish Ishibashi, Ted Gull (and the η Carinae "lunch bunch"), Roberta Humphreys, Kris Davidson, Kenji Hamaguchi and Stephen White for many stimulating (and sometimes high-temperated) discussions about η Carinae. I also gratefully appreciate the help of two student interns, Gary Price (from Richard Stockton College) and Laura Woodworth (from Eleanor Roosevelt High School) who helped with the data reduction. This research has made use of NASA's Astrophysics Data System. This research has made use of data obtained from the High Energy Astrophysics Science Archive Research Center (HEASARC), provided by NASA's Goddard Space Flight Center.

REFERENCES

- Corcoran, M. F. et al. 1998, ApJ, 494, 381
- Corcoran, M. F., Rawley, G. L., Swank, J. H., & Petre, R. 1995, ApJ, 445, L121
- Corcoran, M. F., Ishibashi, K., Davidson, K., Swank, J. H., Petre, R., & Schmitt, J. H. M. M. 1997, Nature, 390, 587
- Corcoran, M. F., Fredericks, A. C., Petre, R., Swank, J. H., & Drake, S. A. 2000, ApJ, 545, 420
- Corcoran, M. F., Ishibashi, K., Swank, J. H., & Petre, R. 2001a, ApJ, 547, 1034
- Corcoran, M. F. et al. 2001b, ApJ, 562, 1031
- Cox, P., 1997, ASP Conf. Ser., 120, 277
- Damineli, A. 1996, ApJ, 460, L49
- Damineli, A., Conti, P. S., & Lopes, D. F. 1997, New Astronomy, 2, 107
- Davidson, K., Ishibashi, K., & Corcoran, M. F. 1998, New Astronomy, 3, 241
- Davidson, K. 1997, New Astronomy, 2, 387
- Davidson, K., et al. 1999, AJ, 118, 1777
- Davidson, K., et al. 2000, ApJ, 530, L107
- Davidson, K. & Humphreys, R. M. 1997, ARA&A, 35, 1
- Duncan, R. A., White, S. M., Lim, J., Nelson, G. J., Drake, S. A., & Kundu, M. R. 1995, ApJ, 441, L73
- Feast, M., et al., 2001, MNRAS, 322, 741
- Fernandez Lajus, E., Gamen, R., Schwartz, M., Salerno, N., Llinares, C., Farina, C., Amorn, R., & Niemela, V. 2003, Informational Bulletin on Variable Stars, 5477, 1
- Hillier, J. D., et al., 2001, ApJ, 553, 837
- Ishibashi, K., et al., 1997, IAUC, 6668, 1
- Ishibashi, K., et al., 1999, ApJ, 524, 983

- Martin, J. C. & Koppelman, M. D. 2004, AJ, 127, 2352
- Pittard, J. M., et al. 1998, MNRAS, 299, L5
- Pittard, J. M. & Corcoran, M. F. 2002, A&A, 383, 636
- Smith, N., Morse, J. A., Collins, N. R., & Gull, T. R. 2004, ApJ, 610, L105
- Sterken, C., Freyhammer, L., Arentoft, T., & van Genderen, A. M. 1999, A&A, 346, L33
- van Genderen, A. M., Sterken, C., de Groot, M., & Burki, G. 1999, A&A, 343, 847
- van Genderen, A. M. & Sterken, C. 2004, A&A, 423, L1
- Viotti, R. F., et al. 2002, A&A, 385, 874
- Whitelock, P. A., Feast, M. W., Koen, C., Roberts, G., & Carter, B. S. 1994, MNRAS, 270, 364
- Whitelock, P. A., Feast, M. W., Marang, F., & Breedt, E. 2004, MNRAS, 352, 447
- Steiner, J. E. & Damineli, A. 2004, ApJ, 612, L133

Table 1. *RXTE* Flux Calibration Data

Observatory	Date	Observation ID	Flux ^b	<i>RXTE</i> Date	<i>RXTE</i> PCU Net Rates ^a —			
					PCU0	PCU2	PCU3	PCU4
ASCA	07/29/96	24035000	7.19E-11	07/31/96	11.77±0.19	11.51±0.19	11.60±0.19	11.36±0.18
ASCA	07/03/97	11504000	1.15E-10	07/03/97	16.98±0.27	16.94±0.26	17.13±0.26	...
ASCA	07/19/97	11504010	9.75E-11	07/20/97	15.68±0.20	15.49±0.20	15.56±0.20	...
ASCA	12/24/97	26033000	3.84E-12	12/24/97	3.40±0.22	3.53±0.22	3.80±0.22	3.26±0.22
ASCA	07/16/98	26034000	7.12E-11	07/14/98	10.98±0.19	10.58±0.18	10.93±0.19	10.42±0.18
ASCA	02/08/99	27023000	8.51E-11	02/07/99	10.96±0.20	10.80±0.19	10.65±0.19	...
ASCA	06/14/99	27024000	5.68E-11	06/15/99	10.87±0.22	10.06±0.21	...	...
BeppoSAX	12/29/96		7.33E-11	12/27/96	11.85±0.22	10.97±0.22	11.28±0.22	...
BeppoSAX	03/18/98		6.12E-11	03/18/98	10.48±0.22	10.37±0.21	10.62±0.22	...
CHANDRA	11/19/00	200057	5.95E-11	11/19/00	9.36±0.15	10.51±0.19	...	9.03±0.14
CHANDRA	10/16/02	200219	1.17E-10	10/15/02	15.77±0.18	18.24±0.22	...	15.26±0.18
CHANDRA	05/03/03	200215	2.56E-10	05/03/03	34.53±0.22	39.92±0.26	34.75±0.22	33.12±0.22
CHANDRA	06/16/03	200218	1.45E-10	06/16/03	22.15±0.21	25.47±0.25	...	21.09±0.20
CHANDRA	07/20/03	200216	2.25E-12	07/21/03	3.84±0.16	4.98±0.21	...	3.75±0.16
CHANDRA	09/26/03	200217	6.26E-11	09/26/03	11.28±0.18	12.44±0.22	11.52±0.18	...
XMM ^c	01/25-29/03	01457401-01457405	1.52E-10	01/25/03	20.95±0.17	24.09±0.20	...	20.15±0.17
XMM	06/08/03	160160101	1.29E-10	06/08/03	18.02±0.20	21.83±0.24	...	17.28±0.19
XMM	06/13/03	160160901	1.97E-10	06/13/03	23.95±0.27	27.08±0.33	...	22.55±0.26
XMM	07/22/03	01457801	3.65E-12	07/21/03	5.03±0.81	4.09±0.98	4.95±0.83	4.90±0.77
XMM	08/02/03	01605601	8.47E-12	08/02/03	4.12±0.16	5.86±0.21	...	3.89±0.15
XMM	08/09/03	01605602	9.47E-12	08/09/03	4.72±0.15	5.67±0.19	...	...
XMM	08/18/03	01605603	1.13E-11	08/18/03	4.51±0.26	4.98±0.33	...	4.11±0.25

^aRates are corrected for estimated instrumental background.^bIn the 2 – 10 keV band; fluxes have not been corrected for absorption.^cCombination of 5 observations.

Note. — ASCA fluxes from Corcoran et al. (2001b); BeppoSAX fluxes from Viotti et al. (2002); CHANDRA flux from observation on 11/19/00 from Corcoran et al. (2001a); 2003 CHANDRA and XMM fluxes from Corcoran et al. (2004, in preparation) and Hamaguchi et al. (2004, in preparation), respectively.

Table 2. *RXTE* Scaled Fluxes

Date	JD -2,400,000	— <i>RXTE</i> PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1996020915	50123.125	6.10	6.75	6.95	6.93	6.73	6.70± 0.35
1996021610	50129.917	6.18	6.69	6.60	6.88	6.34	6.54± 0.28
1996022113	50135.042	6.11	6.82	6.95	7.15	6.95	6.80± 0.40
1996022920	50143.333	6.04	6.56	6.66	6.92	7.06	6.65± 0.40
1996030520	50148.333	6.12	6.70	6.65	7.25	6.86	6.71± 0.41
1996030814	50151.083	6.02	7.16	6.51	6.76	7.57	6.81± 0.60
1996040704	50180.667	5.81	6.47	6.51	...	...	6.26± 0.40
1996041216	50186.167	6.35	6.91	7.20	...	...	6.82± 0.43
1996042217	50196.208	5.51	5.92	5.93	6.11	...	5.87± 0.25
1996042615	50200.125	5.67	6.28	6.06	6.04	6.25	6.06± 0.24
1996050309	50206.875	5.55	6.27	6.32	6.26	6.65	6.21± 0.40
1996051202	50215.583	6.12	6.54	6.52	...	...	6.40± 0.24
1996051723	50221.458	6.21	6.36	6.39	...	...	6.32± 0.09
1996052920	50233.333	6.35	6.91	6.75	6.55	6.93	6.70± 0.25
1996060507	50239.792	7.07	7.80	7.77	...	7.06	7.43± 0.42
1996060909	50243.875	5.55	6.41	6.58	6.61	6.45	6.32± 0.44
1996061901	50253.542	6.06	6.61	6.45	...	...	6.37± 0.28
1996062614	50261.083	6.04	6.73	6.47	6.56	6.20	6.40± 0.28
1996070112	50266.000	6.14	6.59	6.66	...	...	6.47± 0.28
1996071019	50275.292	6.07	6.62	7.09	...	...	6.59± 0.51
1996071517	50280.208	6.37	7.18	6.80	7.02	6.71	6.81± 0.31
1996072214	50287.083	6.93	7.57	7.99	...	...	7.50± 0.53
1996072215	50287.125	6.93	7.57	7.99	...	...	7.50± 0.53
1996073122	50296.417	6.54	7.31	7.39	7.45	...	7.17± 0.43
1996080520	50301.333	6.37	6.92	6.95	...	...	6.75± 0.32
1996081310	50308.917	6.17	6.59	6.79	...	...	6.52± 0.32
1996082105	50316.708	5.78	6.37	6.25	...	...	6.13± 0.31
1996082720	50323.333	6.25	6.83	6.54	...	...	6.54± 0.29
1996090322	50330.417	6.34	6.86	6.80	6.91	6.74	6.73± 0.23
1996090818	50335.250	5.76	6.37	6.32	...	...	6.15± 0.34
1996091804	50344.667	5.87	6.54	6.68	...	...	6.36± 0.44
1996092519	50352.292	5.51	6.00	6.26	...	...	5.92± 0.38
1996100106	50357.750	5.62	6.55	6.31	6.59	...	6.26± 0.45
1996100813	50365.042	5.68	6.51	6.38	...	...	6.19± 0.45
1996101411	50370.958	6.01	6.64	6.75	...	...	6.46± 0.40
1996102414	50381.083	6.43	7.41	7.08	...	...	6.97± 0.50
1996102917	50386.208	6.37	7.13	7.13	...	...	6.88± 0.44
1996110411	50391.958	5.89	6.57	6.47	6.89	6.49	6.46± 0.36
1996111014	50398.083	6.20	7.00	6.48	...	...	6.56± 0.41
1996111600	50403.500	5.84	6.78	6.71	...	...	6.44± 0.52
1996112413	50412.042	6.41	6.98	6.94	...	...	6.78± 0.32
1996112910	50416.917	5.86	6.60	6.98	...	...	6.48± 0.57
1996120901	50426.542	5.93	6.55	7.09	...	...	6.52± 0.58

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1996121316	50431.167	5.93	6.76	6.72	...	...	6.47± 0.47
1996122008	50437.833	6.05	6.95	6.63	7.03	6.83	6.70± 0.39
1996122706	50444.750	6.09	7.05	7.39	...	...	6.84± 0.67
1997010510	50453.917	7.06	7.73	7.69	8.12	7.76	7.67± 0.38
1997011113	50460.042	7.28	8.47	8.44	...	...	8.06± 0.68
1997011904	50467.667	8.09	8.65	9.14	9.23	8.95	8.81± 0.46
1997012512	50474.000	8.06	8.82	8.90	9.35	9.31	8.89± 0.52
1997020106	50480.750	7.42	8.25	8.44	...	...	8.03± 0.54
1997021012	50490.000	7.26	7.91	8.16	8.49	7.93	7.95± 0.45
1997021507	50494.792	7.16	8.11	8.15	8.50	8.28	8.04± 0.51
1997022414	50504.083	7.18	8.04	8.00	8.24	8.00	7.89± 0.41
1997030601	50513.542	7.19	8.14	8.12	8.67	8.07	8.04± 0.53
1997031100	50518.500	7.66	8.02	8.48	8.61	...	8.19± 0.44
1997031916	50527.167	8.09	9.17	9.40	...	...	8.89± 0.70
1997032313	50531.042	8.08	9.39	8.94	9.53	9.53	9.10± 0.62
1997040210	50540.917	9.07	10.58	10.29	...	...	9.98± 0.80
1997041008	50548.833	9.85	10.96	11.24	11.33	11.13	10.90± 0.60
1997041705	50555.708	9.21	10.08	10.34	...	...	9.88± 0.59
1997042300	50561.500	9.42	10.16	10.50	...	...	10.03± 0.55
1997042621	50565.375	8.89	10.14	9.90	10.57	10.28	9.96± 0.64
1997050402	50572.583	8.77	9.66	9.19	9.98	9.30	9.38± 0.46
1997051510	50583.917	8.32	9.74	9.96	9.84	...	9.47± 0.77
1997052000	50588.500	8.72	9.17	9.69	...	...	9.19± 0.48
1997052902	50597.583	9.97	11.10	11.20	...	...	10.76± 0.68
1997060502	50604.583	9.86	11.12	11.44	11.76	11.04	11.04± 0.72
1997060723	50607.458	9.99	10.78	11.42	11.24	10.85	10.86± 0.55
1997061907	50618.792	9.88	11.18	11.83	11.89	11.20	11.20± 0.81
1997062009	50619.875	10.16	11.44	11.78	...	...	11.13± 0.86
1997062110	50620.917	9.89	10.72	11.01	11.08	10.75	10.69± 0.47
1997062201	50621.542	9.70	10.95	11.20	...	...	10.62± 0.81
1997062303	50622.625	9.74	10.90	11.13	...	...	10.59± 0.75
1997062413	50624.042	9.99	11.31	11.15	...	...	10.81± 0.72
1997062414	50624.083	9.99	11.31	11.15	...	...	10.81± 0.72
1997062506	50624.750	10.23	10.90	11.62	...	...	10.92± 0.70
1997062606	50625.750	10.03	11.07	11.26	...	...	10.79± 0.66
1997062607	50625.792	10.03	11.07	11.26	...	...	10.79± 0.66
1997062706	50626.750	9.68	11.08	11.23	...	...	10.66± 0.86
1997062801	50627.542	10.01	11.17	11.23	...	...	10.80± 0.69
1997062903	50628.625	10.03	11.46	11.17	...	...	10.89± 0.76
1997062920	50629.333	10.03	11.51	11.31	...	...	10.95± 0.80
1997070103	50630.625	9.80	11.09	11.49	...	...	10.79± 0.88
1997070319	50633.292	10.45	11.51	11.73	...	...	11.23± 0.69
1997070411	50633.958	10.57	11.93	11.84	12.33	12.02	11.74± 0.68

Table 2—Continued

Date	JD –2,400,000	— <i>RXTE</i> PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1997070500	50634.500	10.74	12.43	12.37	...	...	11.85± 0.96
1997070501	50634.542	10.74	12.43	12.37	...	...	11.85± 0.96
1997070604	50635.667	10.55	12.02	12.22	...	...	11.60± 0.91
1997070705	50636.708	10.71	11.73	12.17	...	...	11.54± 0.75
1997070806	50637.750	10.37	11.54	11.47	...	...	11.13± 0.66
1997070912	50639.000	9.89	10.82	11.26	11.38	10.87	10.84± 0.59
1997071012	50640.000	9.72	10.58	11.20	10.55	10.63	10.53± 0.53
1997071106	50640.750	9.32	10.34	10.53	...	...	10.06± 0.65
1997071222	50642.417	8.79	9.92	10.17	...	...	9.63± 0.74
1997071322	50643.417	8.86	10.59	9.69	...	...	9.71± 0.86
1997071421	50644.375	8.60	10.04	10.31	...	...	9.65± 0.92
1997071600	50645.500	9.22	10.30	10.37	...	...	9.96± 0.64
1997071622	50646.417	9.18	10.22	10.41	...	...	9.94± 0.66
1997071720	50647.333	9.15	10.45	10.53	11.28	9.74	10.23± 0.81
1997072000	50649.500	9.35	10.38	10.52	...	...	10.08± 0.64
1997072106	50650.750	9.84	10.84	10.85	...	...	10.51± 0.58
1997072411	50653.958	10.41	11.51	11.52	...	...	11.15± 0.64
1997072900	50658.500	11.00	11.99	12.50	12.45	12.14	12.02± 0.61
1997080316	50664.167	12.22	13.13	13.28	...	...	12.87± 0.57
1997081022	50671.417	11.73	13.14	13.31	...	...	12.72± 0.87
1997081522	50676.417	11.58	12.86	12.92	...	...	12.45± 0.76
1997082314	50684.083	9.03	10.13	10.19	...	...	9.78± 0.66
1997083008	50690.833	11.28	12.68	13.10	...	...	12.35± 0.95
1997091121	50703.375	10.83	12.45	12.81	12.99	12.36	12.29± 0.85
1997091802	50709.583	12.28	14.15	14.64	...	...	13.69± 1.25
1997092315	50715.125	13.70	15.27	15.57	...	...	14.85± 1.01
1997092819	50720.292	14.85	16.87	17.31	...	...	16.34± 1.32
1997100618	50728.250	10.38	11.87	11.95	12.08	11.56	11.57± 0.69
1997101219	50734.292	9.21	10.55	10.54	...	...	10.10± 0.77
1997101909	50740.875	11.93	13.44	14.08	...	...	13.15± 1.10
1997102721	50749.375	13.20	15.16	15.12	...	...	14.49± 1.12
1997110210	50754.917	9.13	9.70	10.72	...	...	9.85± 0.81
1997110912	50762.000	16.53	18.54	19.54	...	...	18.20± 1.53
1997111915	50772.125	13.71	15.37	14.78	...	...	14.62± 0.85
1997112509	50777.875	9.84	11.00	11.09	11.49	11.07	10.90± 0.62
1997113023	50783.458	4.09	4.82	4.73	...	...	4.54± 0.40
1997120711	50789.958	5.47	6.24	6.25	...	...	5.99± 0.45
1997121118	50794.250	2.07	2.30	1.60	1.93	1.58	1.89± 0.31
1997121323	50796.458	1.53	1.96	1.36	1.72	1.39	1.59± 0.25
1997121414	50797.083	1.14	1.77	1.30	...	...	1.40± 0.33
1997121502	50797.583	1.16	1.20	0.70	0.86	0.81	0.95± 0.22
1997121616	50799.167	0.99	1.24	0.55	...	...	0.92± 0.35
1997121707	50799.792	0.85	0.58	0.47	...	...	0.64± 0.20

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1997121808	50800.833	0.97	0.90	0.40	...	...	0.76± 0.31
1997121916	50802.167	1.02	1.07	0.40	...	...	0.83± 0.37
1997122014	50803.083	0.42	0.67	0.45	...	...	0.51± 0.14
1997122116	50804.167	0.86	0.80	0.31	...	...	0.66± 0.30
1997122117	50804.208	0.86	0.80	0.31	...	...	0.66± 0.30
1997122212	50805.000	0.56	0.28	0.16	...	...	0.33± 0.20
1997122316	50806.167	0.71	0.88	0.60	0.74	0.32	0.65± 0.21
1997122420	50807.333	0.78	0.99	0.23	0.46	0.27	0.55± 0.33
1997122523	50808.458	1.02	0.73	0.38	...	...	0.71± 0.32
1997122621	50809.375	1.07	0.87	0.12	0.83	0.54	0.68± 0.37
1997122722	50810.417	0.80	0.85	0.41	...	...	0.68± 0.24
1997122813	50811.042	0.74	0.87	0.43	...	...	0.68± 0.22
1997123000	50812.500	0.66	0.99	0.49	...	...	0.71± 0.26
1997123022	50813.417	1.06	0.86	0.56	...	...	0.83± 0.25
1997123111	50813.958	0.56	1.69	-0.71	...	...	0.51± 1.20
1997123112	50814.000	0.56	1.69	-0.71	...	...	0.51± 1.20
1998010110	50814.917	0.69	1.06	0.10	0.64	0.44	0.59± 0.35
1998010311	50816.958	0.94	0.73	0.29	...	...	0.65± 0.33
1998010510	50818.917	0.90	0.95	0.37	...	...	0.74± 0.32
1998010703	50820.625	1.02	0.94	0.71	...	...	0.89± 0.16
1998010914	50823.083	1.09	1.21	0.81	1.03	1.01	1.03± 0.15
1998011108	50824.833	0.84	1.00	0.79	0.72	0.92	0.85± 0.11
1998011308	50826.833	1.06	0.97	0.78	1.03	0.57	0.88± 0.21
1998011512	50829.000	1.20	1.31	0.82	...	...	1.11± 0.26
1998011712	50831.000	1.13	1.10	0.65	...	...	0.96± 0.27
1998011921	50833.375	0.83	0.88	0.95	...	...	0.88± 0.06
1998012114	50835.083	1.01	1.16	0.59	...	...	0.92± 0.30
1998012319	50837.292	1.28	1.36	0.69	...	...	1.11± 0.36
1998012519	50839.292	1.29	1.38	0.60	0.88	0.97	1.02± 0.32
1998012711	50840.958	1.24	1.13	0.95	...	...	1.11± 0.15
1998012712	50841.000	1.24	1.13	0.95	...	...	1.11± 0.15
1998012914	50843.083	1.00	1.31	0.96	...	...	1.09± 0.19
1998013111	50844.958	1.13	1.11	0.49	...	...	0.91± 0.37
1998020212	50847.000	1.42	1.50	0.95	...	...	1.29± 0.30
1998020415	50849.125	0.71	1.73	0.45	...	...	0.96± 0.68
1998020416	50849.167	0.71	1.73	0.45	...	...	0.96± 0.68
1998020602	50850.583	1.30	1.65	1.01	...	...	1.32± 0.32
1998020805	50852.708	1.60	1.92	1.58	...	...	1.70± 0.19
1998020806	50852.750	1.60	1.92	1.58	...	...	1.70± 0.19
1998021007	50854.792	1.84	1.88	1.54	...	...	1.75± 0.19
1998021203	50856.625	1.60	1.90	1.79	...	...	1.77± 0.15
1998021402	50858.583	2.04	2.28	1.58	...	...	1.97± 0.36
1998021603	50860.625	2.64	0.78	0.22	...	...	1.22± 1.27

Table 2—Continued

Date	JD -2, 400, 000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1998021802	50862.583	2.07	2.27	2.14	...	...	2.16± 0.10
1998022002	50864.583	2.27	2.14	1.95	...	...	2.12± 0.16
1998022214	50867.083	2.70	2.91	2.88	...	...	2.83± 0.12
1998022413	50869.042	2.85	3.07	3.02	...	...	2.98± 0.11
1998022618	50871.250	2.74	3.04	2.63	...	...	2.80± 0.21
1998022816	50873.167	3.25	3.34	3.32	...	...	3.30± 0.05
1998030211	50874.958	3.51	3.64	3.35	...	...	3.50± 0.15
1998030407	50876.792	4.47	4.94	4.89	5.25	4.49	4.81± 0.33
1998030615	50879.125	5.20	5.44	5.64	...	...	5.42± 0.22
1998030813	50881.042	4.73	5.72	5.96	...	...	5.47± 0.65
1998030913	50882.042	5.55	6.08	5.82	...	...	5.82± 0.27
1998031007	50882.792	5.75	6.40	6.07	6.63	5.99	6.17± 0.35
1998031107	50883.792	5.65	6.05	6.03	...	...	5.91± 0.22
1998031202	50884.583	5.48	6.29	6.22	6.26	6.12	6.07± 0.34
1998031318	50886.250	6.05	6.86	6.65	6.67	6.27	6.50± 0.33
1998031416	50887.167	6.03	6.54	6.60	...	...	6.39± 0.31
1998031516	50888.167	5.79	6.46	6.40	...	...	6.22± 0.37
1998031616	50889.167	5.59	6.36	6.38	...	...	6.11± 0.45
1998031715	50890.125	6.13	6.61	6.49	...	...	6.41± 0.25
1998031816	50891.167	5.70	6.40	6.26	...	...	6.12± 0.37
1998031912	50892.000	5.79	6.71	6.60	...	...	6.37± 0.50
1998032013	50893.042	5.53	6.35	6.37	...	...	6.08± 0.48
1998032116	50894.167	...	6.10	5.94	...	...	6.02± 0.12
1998032210	50894.917	...	6.17	6.31	...	...	6.24± 0.10
1998032315	50896.125	...	6.05	5.75	...	...	5.90± 0.22
1998032415	50897.125	5.34	5.92	6.07	...	...	5.78± 0.39
1998032510	50897.917	5.09	5.53	5.71	...	...	5.45± 0.32
1998032611	50898.958	5.11	5.46	5.72	...	...	5.43± 0.30
1998032712	50900.000	5.06	5.54	5.35	...	...	5.32± 0.25
1998032813	50901.042	5.05	5.88	5.54	...	...	5.49± 0.41
1998033112	50904.000	4.97	6.15	5.53	...	...	5.55± 0.59
1998040713	50911.042	5.45	5.95	5.66	5.90	5.70	5.73± 0.20
1998041623	50920.458	5.93	6.40	6.19	...	...	6.18± 0.24
1998042300	50926.500	6.62	7.19	6.91	7.38	6.78	6.98± 0.31
1998042913	50933.042	6.37	7.34	7.06	...	...	6.93± 0.50
1998050610	50939.917	6.48	7.12	7.14	...	...	6.91± 0.37
1998051418	50948.250	6.42	7.07	7.19	...	...	6.89± 0.42
1998052010	50953.917	6.47	6.96	6.70	...	...	6.71± 0.24
1998052823	50962.458	5.60	5.79	9.22	6.35	8.71	7.14± 1.70
1998060223	50967.458	6.86	7.61	7.45	...	...	7.31± 0.39
1998060405	50968.708	6.41	7.45	7.48	7.54	7.39	7.25± 0.47
1998060423	50969.458	6.76	7.47	7.57	...	...	7.27± 0.44
1998060521	50970.375	6.90	7.77	8.07	...	...	7.58± 0.61

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1998060701	50971.542	6.93	7.73	7.80	...	...	7.49± 0.48
1998060802	50972.583	6.80	7.42	7.84	...	...	7.35± 0.53
1998060907	50973.792	6.99	7.91	7.67	7.94	7.47	7.60± 0.39
1998061018	50975.250	7.02	7.53	7.85	...	...	7.47± 0.42
1998061122	50976.417	7.05	7.85	7.96	7.96	7.84	7.73± 0.39
1998061300	50977.500	6.87	8.03	7.72	...	...	7.54± 0.60
1998061402	50978.583	7.00	8.14	8.27	...	...	7.80± 0.70
1998061505	50979.708	7.26	8.23	8.09	...	...	7.86± 0.52
1998061605	50980.708	7.00	8.10	8.12	...	...	7.74± 0.64
1998061704	50981.667	7.32	8.17	8.21	...	...	7.90± 0.50
1998061804	50982.667	7.23	8.03	8.07	...	...	7.78± 0.47
1998061902	50983.583	6.84	7.97	7.88	...	...	7.56± 0.63
1998062002	50984.583	6.99	7.94	8.14	...	...	7.69± 0.61
1998062100	50985.500	6.96	8.01	7.97	...	...	7.65± 0.59
1998062200	50986.500	7.08	7.59	7.72	...	...	7.46± 0.33
1998062907	50993.792	6.92	7.89	8.26	...	...	7.69± 0.69
1998070617	51001.208	6.31	6.95	6.70	...	...	6.66± 0.32
1998071407	51008.792	5.84	6.68	6.65	6.98	6.62	6.55± 0.43
1998072304	51017.667	6.70	7.28	7.31	7.86	7.52	7.33± 0.43
1998073003	51024.625	6.43	7.31	7.06	...	...	6.94± 0.45
1998073004	51024.667	6.43	7.31	7.06	...	...	6.94± 0.45
1998080507	51030.792	6.33	7.20	6.99	...	...	6.84± 0.45
1998081110	51036.917	6.07	6.70	6.78	...	...	6.52± 0.39
1998081917	51045.208	5.86	6.63	6.33	6.54	6.12	6.30± 0.32
1998082502	51050.583	5.78	6.61	6.37	...	...	6.25± 0.42
1998090104	51057.667	6.25	7.30	7.12	7.36	6.98	7.00± 0.44
1998090723	51064.458	5.98	7.25	6.89	7.11	6.58	6.77± 0.50
1998091506	51071.750	6.48	7.49	7.24	...	...	7.07± 0.53
1998092401	51080.542	6.20	7.42	7.10	...	...	6.91± 0.64
1998092904	51085.667	5.67	6.74	6.49	...	...	6.30± 0.56
1998100521	51092.375	5.93	6.75	6.52	...	...	6.40± 0.42
1998101001	51096.542	6.16	6.92	6.86	6.79	7.03	6.75± 0.34
1998102912	51116.000	7.04	7.91	8.07	...	...	7.67± 0.55
1998110309	51120.875	6.46	7.99	7.58	...	...	7.34± 0.79
1998110310	51120.917	6.46	7.99	7.58	...	...	7.34± 0.79
1998111014	51128.083	6.53	7.34	7.58	...	...	7.15± 0.55
1998111712	51135.000	6.27	7.15	7.40	7.21	7.15	7.04± 0.44
1998112401	51141.542	6.00	7.12	6.54	6.92	6.61	6.64± 0.43
1998120121	51149.375	5.62	5.99	6.80	...	...	6.14± 0.60
1998120122	51149.417	5.62	5.99	6.80	...	...	6.14± 0.60
1998120801	51155.542	5.98	7.01	6.77	...	...	6.59± 0.54
1998121703	51164.625	6.06	7.35	6.79	...	...	6.73± 0.65
1998122410	51171.917	6.30	6.99	6.98	...	...	6.76± 0.39

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1998123101	51178.542	6.32	7.52	7.09	...	...	6.98± 0.61
1999010212	51181.000	6.10	6.94	6.72	...	...	6.59± 0.44
1999010508	51183.833	6.17	7.19	7.21	7.47	...	7.01± 0.57
1999010909	51187.875	5.96	6.76	6.79	...	...	6.50± 0.47
1999011307	51191.792	6.00	6.97	6.99	...	...	6.66± 0.57
1999011704	51195.667	6.45	7.50	7.21	7.76	...	7.23± 0.57
1999012010	51198.917	6.21	6.93	7.27	7.30	...	6.93± 0.51
1999012318	51202.250	6.55	7.43	6.97	...	...	6.98± 0.44
1999013105	51209.708	5.88	6.70	7.00	...	...	6.53± 0.58
1999013106	51209.750	5.88	6.70	7.00	...	...	6.53± 0.58
1999020405	51213.708	6.02	6.81	6.96	...	...	6.60± 0.50
1999020721	51217.375	6.03	6.41	6.55	...	...	6.33± 0.27
1999021021	51220.375	5.68	6.49	6.56	...	...	6.24± 0.49
1999021508	51224.833	5.45	6.69	6.18	...	...	6.10± 0.62
1999021823	51228.458	5.52	6.34	6.35	6.20	...	6.10± 0.40
1999022105	51230.708	5.59	6.27	6.04	6.09	...	6.00± 0.29
1999022505	51234.708	5.44	5.68	5.58	...	...	5.57± 0.12
1999030113	51239.042	5.02	5.57	5.53	5.66	5.44	5.44± 0.25
1999030523	51243.458	4.83	5.61	5.44	5.69	...	5.40± 0.39
1999030909	51246.875	4.64	...	5.09	...	...	4.86± 0.32
1999031506	51252.750	4.62	...	5.09	...	...	4.85± 0.33
1999031823	51256.458	4.93	...	5.49	...	...	5.21± 0.39
1999032216	51260.167	5.03	...	5.37	...	...	5.20± 0.24
1999032719	51265.292	5.24	6.02	5.76	...	...	5.67± 0.40
1999033120	51269.333	5.19	...	6.09	...	...	5.64± 0.63
1999040412	51273.000	5.17	...	5.60	5.79	...	5.52± 0.32
1999040815	51277.125	5.24	...	5.37	...	...	5.31± 0.10
1999041212	51281.000	4.82	...	5.52	...	...	5.17± 0.50
1999041623	51285.458	4.44	...	5.09	...	...	4.76± 0.46
1999042106	51289.750	4.60	...	5.24	...	...	4.92± 0.45
1999042412	51293.000	4.40	...	4.85	5.10	...	4.78± 0.35
1999042723	51296.458	4.42	...	5.05	5.00	...	4.82± 0.35
1999043010	51298.917	4.62	...	4.79	5.21	...	4.87± 0.31
1999050410	51302.917	4.69	...	5.43	5.48	...	5.20± 0.44
1999051012	51309.000	5.03	...	5.30	...	...	5.16± 0.19
1999051312	51312.000	4.58	...	5.23	5.53	4.97	5.08± 0.40
1999051821	51317.375	4.69	5.48	4.95	...	4.73	4.96± 0.36
1999052219	51321.292	4.82	5.64	5.30	5.47	...	5.31± 0.35
1999052623	51325.458	4.66	...	5.44	5.23	...	5.11± 0.40
1999053010	51328.917	4.62	...	5.00	5.05	5.07	4.94± 0.21
1999060321	51333.375	4.60	4.13	4.78	...	4.51	4.51± 0.28
1999060503	51334.625	4.83	...	5.34	5.36	...	5.18± 0.30
1999061001	51339.542	4.84	...	5.38	...	...	5.11± 0.38

Table 2—Continued

Date	JD -2,400,000	PCU0	—RXTE PCU Fluxes ^a —				PCA Flux ^a
			PCU1	PCU2	PCU3	PCU4	
1999061516	51345.167	5.49	...	6.64	...	...	6.07± 0.82
1999061916	51349.167	5.22	...	5.58	5.76	...	5.52± 0.28
1999062308	51352.833	4.87	...	5.15	5.68	...	5.24± 0.41
1999062700	51356.500	4.97	...	5.49	...	4.96	5.14± 0.30
1999062701	51356.542	4.97	...	5.49	...	4.96	5.14± 0.30
1999070109	51360.875	4.77	...	5.23	5.35	...	5.12± 0.31
1999070517	51365.208	4.73	...	5.12	5.40	5.14	5.10± 0.28
1999070719	51367.292	4.69	...	5.27	5.51	...	5.16± 0.42
1999071315	51373.125	5.02	...	5.11	...	...	5.07± 0.07
1999071803	51377.625	...	6.13	6.06	5.97	...	6.05± 0.08
1999072118	51381.250	5.71	...	5.70	6.03	...	5.82± 0.19
1999072516	51385.167	5.72	...	6.29	6.03	...	6.02± 0.29
1999072918	51389.250	5.71	...	6.36	...	...	6.03± 0.46
1999080204	51392.667	5.63	...	6.24	6.33	...	6.07± 0.38
1999080522	51396.417	5.55	...	6.14	...	...	5.85± 0.42
1999081102	51401.583	5.50	...	6.32	6.40	...	6.07± 0.50
1999081322	51404.417	5.81	...	6.28	...	6.47	6.19± 0.34
1999081821	51409.375	5.75	...	6.26	6.59	...	6.20± 0.42
1999082219	51413.292	6.03	...	6.40	...	6.55	6.33± 0.26
1999082618	51417.250	5.76	...	6.16	6.64	...	6.19± 0.44
1999083015	51421.125	5.68	...	5.64	...	...	5.66± 0.02
1999090205	51423.708	5.46	6.24	6.03	6.06	5.92	5.95± 0.29
1999090715	51429.125	4.86	...	5.72	...	...	5.29± 0.61
1999091206	51433.750	5.03	...	5.98	5.68	...	5.56± 0.49
1999091322	51435.417	4.91	...	5.78	5.83	...	5.51± 0.51
1999091923	51441.458	4.55	...	5.35	5.63	...	5.18± 0.56
1999092715	51449.125	4.71	...	5.38	5.51	...	5.20± 0.43
1999093023	51452.458	4.70	...	5.45	5.28	...	5.14± 0.39
1999100322	51455.417	4.94	...	5.64	...	...	5.29± 0.50
1999100922	51461.417	4.92	...	5.57	...	...	5.25± 0.46
1999101301	51464.542	4.72	...	5.27	...	...	4.99± 0.39
1999101719	51469.292	5.14	...	5.65	6.01	...	5.60± 0.44
1999102123	51473.458	4.80	...	5.51	...	...	5.15± 0.51
1999102509	51476.875	4.90	...	5.46	...	...	5.18± 0.40
1999102819	51480.292	4.95	...	5.39	...	...	5.17± 0.31
1999110300	51485.500	5.00	...	5.67	...	...	5.33± 0.48
1999110613	51489.042	4.22	...	6.82	...	...	5.52± 1.84
1999111013	51493.042	5.00	...	5.36	5.88	...	5.41± 0.44
1999111423	51497.458	5.01	...	5.47	...	...	5.24± 0.33
1999111902	51501.583	5.17	...	5.80	...	...	5.49± 0.44
1999112302	51505.583	5.13	...	5.56	...	...	5.35± 0.30
1999112503	51507.625	5.32	...	5.82	...	...	5.57± 0.36
1999113002	51512.583	5.36	...	6.04	...	...	5.70± 0.48

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
1999120503	51517.625	5.56	...	6.15	...	...	5.85± 0.42
1999120909	51521.875	5.63	...	6.34	...	...	5.98± 0.50
1999120910	51521.917	5.63	...	6.34	...	...	5.98± 0.50
1999121216	51525.167	5.55	6.59	6.38	...	6.01	6.13± 0.45
1999121512	51528.000	5.39	6.21	6.06	...	6.10	5.94± 0.37
1999122002	51532.583	5.43	...	6.25	...	...	5.84± 0.58
1999122316	51536.167	5.11	...	5.73	...	...	5.42± 0.43
1999122623	51539.458	4.86	...	5.85	...	...	5.36± 0.70
1999123108	51543.833	5.02	...	5.35	...	...	5.18± 0.23
2000010412	51548.000	5.28	...	5.55	...	...	5.41± 0.19
2000010816	51552.167	5.34	...	5.78	...	...	5.56± 0.31
2000011315	51557.125	4.83	...	5.44	...	...	5.13± 0.43
2000011805	51561.708	4.98	...	5.41	...	...	5.20± 0.30
2000012023	51564.458	4.95	...	5.50	...	...	5.22± 0.39
2000012404	51567.667	4.84	...	5.42	6.08	...	5.45± 0.62
2000012811	51571.958	4.51	...	5.01	...	...	4.76± 0.35
2000020116	51576.167	5.08	...	5.44	...	...	5.26± 0.26
2000020518	51580.250	4.82	...	5.65	...	...	5.24± 0.58
2000020519	51580.292	4.82	...	5.65	...	...	5.24± 0.58
2000020906	51583.750	4.67	...	5.10	...	...	4.89± 0.30
2000021411	51588.958	5.22	...	5.67	...	...	5.44± 0.32
2000021620	51591.333	5.04	...	5.53	...	...	5.28± 0.35
2000022109	51595.875	5.05	...	5.86	5.99	...	5.63± 0.51
2000022505	51599.708	5.11	...	5.56	...	...	5.34± 0.32
2000022917	51604.208	4.68	...	5.43	...	...	5.05± 0.53
2000030413	51608.042	4.58	...	4.93	...	...	4.76± 0.25
2000030813	51612.042	4.45	...	4.97	...	...	4.71± 0.37
2000031211	51615.958	4.30	...	4.66	...	...	4.48± 0.25
2000031614	51620.083	4.65	...	4.95	...	...	4.80± 0.21
2000032013	51624.042	5.02	...	5.33	...	...	5.18± 0.22
2000032415	51628.125	4.89	...	5.63	...	...	5.26± 0.52
2000032815	51632.125	4.91	...	5.66	...	...	5.29± 0.53
2000032816	51632.167	4.91	...	5.66	...	...	5.29± 0.53
2000040119	51636.292	4.85	...	5.44	...	...	5.15± 0.42
2000040511	51639.958	4.84	...	5.42	...	...	5.13± 0.40
2000040906	51643.750	4.74	...	5.51	...	...	5.12± 0.55
2000040907	51643.792	4.74	...	5.51	...	...	5.12± 0.55
2000041316	51648.167	4.93	...	5.63	...	...	5.28± 0.50
2000041701	51651.542	5.74	...	4.46	...	...	5.10± 0.91
2000042110	51655.917	4.95	...	5.53	...	...	5.24± 0.42
2000042516	51660.167	4.67	...	5.29	...	...	4.98± 0.44
2000042909	51663.875	4.61	...	5.61	...	...	5.11± 0.70
2000050306	51667.750	4.56	...	5.36	...	...	5.36± 0.15

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2000050706	51671.750	4.68	...	5.05	...	...	5.05± 0.13
2000051108	51675.833	4.91	...	5.40	...	...	5.40± 0.15
2000051503	51679.625	...	...	5.20	...	...	5.20± 0.36
2000051910	51683.917	5.92	...	5.56	5.83	...	5.70± 0.19
2000052309	51687.875	6.20	...	5.69	...	...	5.69± 0.13
2000052723	51692.458	5.95	...	5.24	...	...	5.24± 0.17
2000053116	51696.167	8.02	...	5.67	5.76	...	5.72± 0.07
2000060409	51699.875	10.97	...	5.73	5.87	...	5.80± 0.10
2000060808	51703.833	12.13	...	5.71	...	...	5.71± 0.13
2000061222	51708.417	12.13	...	6.29	6.47	...	6.38± 0.13
2000061620	51712.333	6.99	...	5.95	6.37	...	6.16± 0.30
2000062012	51716.000	7.60	...	6.09	6.10	...	6.10± 0.01
2000062401	51719.542	6.87	...	6.18	6.41	5.84	6.14± 0.28
2000062402	51719.583	6.87	...	6.18	6.41	5.84	6.14± 0.28
2000062818	51724.250	6.82	...	6.17	6.36	6.09	6.20± 0.14
2000070208	51727.833	7.42	...	6.13	6.34	...	6.24± 0.14
2000070620	51732.333	8.36	...	6.13	...	...	6.13± 0.17
2000071009	51735.875	6.67	6.14	6.19	6.23	5.80	6.09± 0.20
2000071404	51739.667	6.80	...	6.19	6.26	...	6.23± 0.05
2000071906	51744.750	6.64	6.21	6.17	6.23	5.88	6.12± 0.16
2000072221	51748.375	6.85	...	6.00	6.19	...	6.10± 0.14
2000072611	51751.958	9.12	...	6.21	...	...	6.21± 0.13
2000073018	51756.250	9.37	...	5.98	4.30	7.81	6.03± 1.75
2000080305	51759.708	20.51	...	6.34	6.16	5.93	6.14± 0.21
2000080703	51763.625	15.74	...	6.58	6.48	...	6.53± 0.07
2000081102	51767.583	7.16	...	6.13	6.52	5.84	6.16± 0.34
2000081502	51771.583	10.69	...	6.26	6.45	5.93	6.21± 0.26
2000081901	51775.542	6.78	...	6.14	6.56	...	6.35± 0.30
2000082318	51780.250	6.90	...	6.18	...	...	6.18± 0.11
2000082718	51784.250	7.05	...	6.31	6.31	6.08	6.23± 0.13
2000083117	51788.208	8.33	...	6.74	6.96	6.44	6.71± 0.26
2000090501	51792.542	7.23	...	6.69	6.99	...	6.84± 0.21
2000091605	51803.708	12.50	...	6.86	6.78	6.44	6.69± 0.22
2000092017	51808.208	12.98	...	6.59	6.21	6.18	6.33± 0.23
2000092417	51812.208	9.11	...	3.45	...	...	... ± ...
2000092814	51816.083	8.82	5.80	5.53	...	...	5.67± 0.19
2000100214	51820.083	6.34	...	5.83	5.75	...	5.79± 0.06
2000100600	51823.500	...	...	...	6.08	...	6.08± 0.15
2000101011	51827.958	5.95	...	5.49	5.56	...	5.53± 0.05
2000101417	51832.208	6.41	...	5.99	6.00	...	6.00± 0.01
2000101820	51836.333	5.52	...	5.66	5.65	...	5.66± 0.01
2000102212	51840.000	17.99	...	5.30	...	...	5.30± 0.15
2000102612	51844.000	5.95	...	5.20	5.44	...	5.32± 0.16

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2000103023	51848.458	6.01	...	5.24	5.77	5.11	5.37± 0.35
2000110313	51852.042	5.90	...	5.04	5.12	...	5.08± 0.06
2000110714	51856.083	5.78	...	5.44	5.23	5.00	5.22± 0.22
2000111115	51860.125	6.86	...	5.34	...	...	5.34± 0.13
2000111513	51864.042	6.80	...	5.43	5.76	...	5.59± 0.23
2000111911	51867.958	5.93	...	5.30	5.45	...	5.38± 0.11
2000112317	51872.208	6.12	...	5.25	5.50	...	5.38± 0.18
2000112708	51875.833	7.46	...	5.53	5.28	...	5.41± 0.17
2000120103	51879.625	5.75	...	5.28	5.40	...	5.34± 0.09
2000120515	51884.125	5.83	...	5.24	5.12	5.17	5.18± 0.06
2000120914	51888.083	5.84	...	5.48	5.51	5.04	5.34± 0.26
2000121320	51892.333	6.05	5.75	5.69	5.76	5.53	5.68± 0.11
2000121702	51895.583	9.55	...	5.67	6.05	5.79	5.84± 0.19
2000122103	51899.625	25.75	...	5.87	5.89	5.95	5.90± 0.04
2000122601	51904.542	10.18	...	5.56	5.94	5.86	5.79± 0.20
2000122923	51908.458	12.60	...	5.76	6.06	...	5.91± 0.22
2001010200	51911.500	6.45	...	5.59	5.62	...	5.60± 0.02
2001010607	51915.792	6.21	...	5.67	6.05	...	5.86± 0.26
2001011015	51920.125	8.68	...	5.54	6.05	...	5.79± 0.36
2001011414	51924.083	7.04	...	5.46	5.75	...	5.60± 0.20
2001011801	51927.542	6.10	5.85	5.45	6.09	...	5.80± 0.32
2001012211	51931.958	6.34	...	5.42	5.79	...	5.61± 0.27
2001012616	51936.167	6.19	...	5.63	6.19	5.79	5.87± 0.29
2001013014	51940.083	6.35	...	5.81	5.92	...	5.86± 0.08
2001020314	51944.083	6.20	6.00	5.87	6.12	...	5.99± 0.12
2001020713	51948.042	5.83	...	6.11	6.35	5.70	6.05± 0.33
2001021116	51952.167	6.43	...	5.98	6.31	6.17	6.15± 0.17
2001021511	51955.958	6.11	...	5.65	5.94	5.60	5.73± 0.18
2001021912	51960.000	6.34	...	5.42	5.95	...	5.68± 0.37
2001022318	51964.250	14.69	...	5.62	5.68	5.58	5.63± 0.05
2001022706	51967.750	6.30	...	5.52	5.88	6.08	5.83± 0.28
2001030305	51971.708	6.53	...	5.83	6.04	5.65	5.84± 0.19
2001030705	51975.708	7.07	...	6.87	...	...	6.87± 0.14
2001031109	51979.875	6.78	...	6.54	6.62	6.36	6.51± 0.14
2001031503	51983.625	6.67	...	6.43	6.89	6.45	6.59± 0.26
2001031819	51987.292	6.91	...	6.32	6.27	...	6.30± 0.04
2001032304	51991.667	6.47	...	5.56	6.01	5.59	5.72± 0.25
2001032623	51995.458	6.34	...	5.07	5.68	...	5.38± 0.43
2001033111	51999.958	5.77	...	5.30	5.30	5.41	5.34± 0.06
2001040406	52003.750	5.84	...	5.08	5.33	4.99	5.13± 0.18
2001040804	52007.667	5.67	...	4.94	5.11	4.98	5.01± 0.09
2001041207	52011.792	58.27	...	5.34	5.67	...	5.51± 0.23
2001041601	52015.542	6.10	...	4.41	4.90	5.01	4.78± 0.32

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2001042002	52019.583	6.37	...	5.21	5.47	5.05	5.25± 0.21
2001042411	52023.958	13.01	...	4.81	5.02	4.88	4.90± 0.11
2001042809	52027.875	11.00	...	5.34	...	...	5.34± 0.13
2001050121	52031.375	6.16	...	5.30	5.26	4.92	5.16± 0.21
2001050602	52035.583	6.13	5.33	5.10	5.64	4.99	5.27± 0.29
2001051010	52039.917	5.53	...	5.21	5.22	4.85	5.09± 0.21
2001051402	52043.583	5.98	...	5.44	5.42	...	5.43± 0.01
2001051900	52048.500	10.38	...	5.61	...	5.48	5.54± 0.09
2001052201	52051.542	6.35	...	5.64	5.40	...	5.52± 0.17
2001052202	52051.583	6.35	...	5.64	5.40	...	5.52± 0.17
2001052605	52055.708	6.11	...	5.41	5.63	...	5.52± 0.16
2001053009	52059.875	5.71	...	5.15	5.36	4.69	5.06± 0.34
2001060312	52064.000	11.02	...	4.99	4.49	...	4.74± 0.35
2001060708	52067.833	7.85	...	5.03	...	...	5.03± 0.13
2001061022	52071.417	5.39	...	4.74	4.99	4.50	4.74± 0.24
2001061509	52075.875	9.47	5.06	4.67	5.07	4.53	4.83± 0.28
2001061822	52079.417	5.57	...	4.96	4.99	4.72	4.89± 0.15
2001062317	52084.208	5.63	5.25	4.67	...	4.65	4.86± 0.34
2001062702	52087.583	5.75	...	5.01	5.02	4.69	4.91± 0.19
2001070502	52095.583	5.79	...	5.21	5.40	...	5.30± 0.14
2001070910	52099.917	5.98	5.68	5.70	5.49	5.29	5.54± 0.19
2001071309	52103.875	6.42	...	6.00	6.04	5.46	5.83± 0.32
2001071705	52107.708	6.43	...	6.29	6.13	5.81	6.08± 0.24
2001072121	52112.375	6.93	...	6.60	6.32	5.91	6.28± 0.35
2001072520	52116.333	7.36	...	6.58	6.78	6.03	6.46± 0.39
2001072919	52120.292	7.48	...	5.80	7.29	5.84	6.31± 0.85
2001080210	52123.917	7.30	...	7.04	6.95	...	6.99± 0.06
2001080618	52128.250	8.29	7.15	7.09	...	7.00	7.08± 0.07
2001081000	52131.500	9.16	6.95	7.08	7.06	6.73	6.96± 0.16
2001081401	52135.542	7.14	...	6.80	6.48	...	6.64± 0.23
2001081801	52139.542	7.11	6.94	6.78	...	...	6.86± 0.12
2001082203	52143.625	7.67	...	6.75	6.97	...	6.86± 0.15
2001082620	52148.333	7.29	6.82	6.51	6.63	6.54	6.63± 0.14
2001083007	52151.792	7.14	6.94	6.99	7.23	6.70	6.97± 0.22
2001090319	52156.292	7.32	...	6.76	6.76	6.32	6.61± 0.25
2001090701	52159.542	7.15	6.79	6.51	6.62	6.40	6.58± 0.17
2001091117	52164.208	7.13	6.63	6.61	6.89	6.73	6.71± 0.13
2001091617	52169.208	7.67	...	6.34	6.50	6.85	6.56± 0.26
2001091905	52171.708	8.08	...	6.47	6.52	...	6.49± 0.03
2001092315	52176.125	6.95	...	6.29	6.37	...	6.33± 0.06
2001092715	52180.125	7.49	6.76	6.42	6.75	...	6.64± 0.19
2001100107	52183.792	7.14	...	6.67	6.67	...	6.67± 0.00
2001100521	52188.375	7.35	...	6.79	6.97	...	6.88± 0.13

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2001100909	52191.875	7.21	...	6.78	6.78	6.46	6.67± 0.18
2001101301	52195.542	7.59	7.05	7.24	7.25	...	7.18± 0.11
2001101713	52200.042	7.82	...	6.88	7.10	4.04	6.01± 1.71
2001102100	52203.500	8.03	...	7.74	7.52	7.54	7.60± 0.12
2001102521	52208.375	8.32	...	7.66	7.62	7.49	7.59± 0.09
2001102914	52212.083	8.60	...	7.99	8.15	7.83	7.99± 0.16
2001110203	52215.625	8.86	...	7.92	8.31	...	8.11± 0.28
2001110619	52220.292	9.46	...	7.81	7.99	7.74	7.85± 0.13
2001111411	52227.958	8.28	...	7.91	8.05	...	7.98± 0.10
2001111800	52231.500	8.40	...	7.80	8.13	...	7.97± 0.23
2001112220	52236.333	9.41	...	7.98	8.12	...	8.05± 0.10
2001120414	52248.083	8.05	7.60	7.43	7.87	7.51	7.60± 0.19
2001120811	52251.958	8.16	...	7.50	...	7.55	7.53± 0.04
2001121208	52255.833	9.10	...	7.43	...	8.30	7.87± 0.62
2001121619	52260.292	8.61	...	7.84	8.26	...	8.05± 0.30
2001121620	52260.333	8.61	...	7.84	8.26	...	8.05± 0.30
2001122015	52264.125	8.47	...	7.76	7.69	6.87	7.44± 0.49
2001122420	52268.333	8.78	7.14	6.82	7.10	7.16	7.06± 0.16
2001122818	52272.250	8.03	7.14	7.10	...	6.84	7.03± 0.16
2002010100	52275.500	7.82	...	7.10	7.59	7.20	7.30± 0.26
2002010519	52280.292	15.87	...	7.19	7.44	7.24	7.29± 0.13
2002010909	52283.875	7.72	...	7.10	7.42	...	7.26± 0.22
2002011307	52287.792	7.87	...	7.16	7.59	...	7.37± 0.30
2002011717	52292.208	8.01	7.70	7.60	7.83	7.27	7.60± 0.24
2002012113	52296.042	7.82	7.38	7.08	...	7.41	7.29± 0.18
2002012520	52300.333	7.65	6.96	6.76	7.19	6.97	6.97± 0.18
2002012922	52304.417	7.75	...	6.92	6.91	...	6.92± 0.01
2002020122	52307.417	8.05	...	7.33	7.12	7.10	7.18± 0.13
2002020609	52311.875	7.57	...	7.01	7.25	...	7.13± 0.17
2002021012	52316.000	7.76	...	7.28	7.31	7.16	7.25± 0.08
2002021418	52320.250	8.23	...	6.82	7.19	6.96	6.99± 0.19
2002021807	52323.792	7.54	...	6.63	7.16	...	6.90± 0.38
2002022211	52327.958	7.48	...	7.31	7.68	...	7.50± 0.26
2002022620	52332.333	7.60	...	7.24	...	...	7.24± 0.13
2002030204	52335.667	7.96	7.55	7.52	7.64	...	7.57± 0.06
2002030604	52339.667	7.73	...	7.32	7.54	...	7.43± 0.16
2002030912	52343.000	7.97	...	7.25	7.37	...	7.31± 0.09
2002031202	52345.583	8.24	...	7.55	7.88	...	7.71± 0.23
2002031615	52350.125	8.31	...	7.91	8.22	...	8.06± 0.21
2002032005	52353.708	8.43	...	7.94	8.19	...	8.06± 0.18
2002032303	52356.625	8.84	...	8.10	8.42	...	8.26± 0.23
2002032602	52359.583	9.12	...	8.13	8.70	...	8.41± 0.40
2002033104	52364.667	9.11	...	8.76	9.00	8.86	8.87± 0.12

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2002040310	52367.917	9.63	9.02	8.91	9.28	...	9.07± 0.19
2002040618	52371.250	11.68	...	8.85	9.09	...	8.97± 0.18
2002040903	52373.625	10.60	...	9.45	9.53	...	9.49± 0.06
2002041402	52378.583	10.45	...	10.64	11.22	10.24	10.70± 0.50
2002041701	52381.542	11.08	...	10.72	...	...	10.72± 0.15
2002042100	52385.500	11.35	...	10.86	...	...	10.86± 0.14
2002042308	52387.833	12.03	...	10.54	...	10.65	10.59± 0.08
2002042808	52392.833	11.07	...	10.76	10.76	10.44	10.65± 0.18
2002043009	52394.875	11.14	...	10.58	10.66	...	10.62± 0.06
2002050511	52399.958	10.64	...	10.19	10.24	9.92	10.12± 0.17
2002050820	52403.333	10.49	...	9.80	9.61	...	9.71± 0.14
2002051100	52405.500	10.58	9.60	9.48	...	...	9.54± 0.08
2002051413	52409.042	10.14	...	9.37	...	...	9.37± 0.14
2002051722	52412.417	9.89	...	8.64	8.88	8.64	8.72± 0.14
2002052205	52416.708	9.12	...	9.12	9.99	...	9.55± 0.61
2002052502	52419.583	9.69	...	9.30	...	8.82	9.06± 0.34
2002053002	52424.583	10.24	...	9.60	9.12	...	9.36± 0.34
2002060110	52426.917	11.65	...	9.29	9.60	...	9.44± 0.22
2002060522	52431.417	9.84	...	9.29	8.34	...	8.81± 0.67
2002060811	52433.958	10.25	...	8.81	9.05	...	8.93± 0.17
2002061310	52438.917	9.86	...	9.03	9.16	...	9.09± 0.10
2002061511	52440.958	9.68	...	9.31	...	...	9.31± 0.15
2002062215	52448.125	9.83	...	9.02	9.12	...	9.07± 0.07
2002062505	52450.708	9.90	9.41	9.15	...	...	9.28± 0.18
2002062901	52454.542	10.40	...	9.54	9.70	...	9.62± 0.11
2002070610	52461.917	10.43	...	9.88	9.79	...	9.83± 0.06
2002071018	52466.250	10.56	...	9.50	9.48	...	9.49± 0.02
2002071322	52469.417	10.68	...	10.11	...	9.69	9.90± 0.30
2002071702	52472.583	11.39	...	9.98	...	9.81	9.89± 0.12
2002072002	52475.583	11.79	...	10.10	10.21	9.74	10.02± 0.25
2002072323	52479.458	11.67	...	10.77	10.80	...	10.78± 0.02
2002072823	52484.458	12.40	...	11.98	12.49	...	12.23± 0.36
2002073119	52487.292	12.77	...	11.90	...	11.63	11.77± 0.19
2002080303	52489.625	13.83	...	11.71	...	11.18	11.45± 0.37
2002080712	52494.000	12.07	...	11.21	11.67	...	11.44± 0.32
2002081023	52497.458	11.28	...	10.25	...	10.14	10.20± 0.08
2002081401	52500.542	10.84	...	10.34	10.37	...	10.36± 0.02
2002081716	52504.167	10.40	...	9.95	...	9.54	9.75± 0.29
2002081717	52504.208	10.40	...	9.95	...	9.54	9.75± 0.29
2002082017	52507.208	10.48	...	9.65	...	...	9.65± 0.14
2002082407	52510.792	10.34	...	9.98	10.10	...	10.04± 0.08
2002082801	52514.542	10.45	...	9.98	10.05	...	10.01± 0.05
2002083013	52517.042	11.28	...	10.52	10.43	...	10.47± 0.06

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2002090320	52521.333	11.22	...	10.50	10.73	...	10.62± 0.16
2002090701	52524.542	11.58	...	10.73	10.82	...	10.78± 0.06
2002091021	52528.375	20.38	...	10.80	10.88	...	10.84± 0.06
2002091423	52532.458	11.25	10.48	10.55	...	...	10.52± 0.05
2002091815	52536.125	11.42	...	10.27	10.44	...	10.36± 0.12
2002092104	52538.667	10.98	...	10.23	10.40	...	10.32± 0.12
2002092423	52542.458	11.21	9.98	9.86	...	...	9.92± 0.08
2002092802	52545.583	10.53	...	9.85	10.06	...	9.96± 0.15
2002100122	52549.417	10.47	...	9.55	...	...	9.55± 0.14
2002100503	52552.625	10.24	...	9.75	...	9.57	9.66± 0.13
2002100804	52555.667	10.07	...	9.79	10.10	...	9.95± 0.23
2002101201	52559.542	10.34	...	9.97	10.36	...	10.17± 0.27
2002101500	52562.500	11.31	...	10.70	10.86	...	10.78± 0.11
2002102012	52568.000	11.24	...	10.66	...	...	10.66± 0.16
2002102319	52571.292	11.17	...	10.51	...	...	10.51± 0.29
2002102618	52574.250	10.68	...	10.04	...	...	10.04± 0.44
2002102920	52577.333	10.93	...	10.58	10.77	...	10.67± 0.13
2002110114	52580.083	11.37	...	11.11	...	...	11.11± 0.26
2002110611	52584.958	12.51	...	12.63	...	...	12.63± 0.51
2002110914	52588.083	13.61	...	12.98	...	...	12.98± 0.13
2002111313	52592.042	13.37	...	12.26	...	...	12.26± 0.24
2002111608	52594.833	12.74	...	12.30	...	...	12.30± 0.18
2002112111	52599.958	12.47	...	12.22	12.48	...	12.35± 0.18
2002112417	52603.208	12.70	...	12.14	12.33	...	12.24± 0.13
2002112714	52606.083	12.26	...	11.99	11.94	...	11.96± 0.04
2002120113	52610.042	12.18	...	11.79	12.06	...	11.93± 0.19
2002120418	52613.250	12.13	...	11.68	...	11.89	11.78± 0.15
2002120617	52615.208	12.38	11.61	12.01	11.84	...	11.82± 0.20
2002121016	52619.167	12.85	...	12.56	13.10	...	12.83± 0.38
2002121419	52623.292	13.43	...	13.20	13.18	...	13.19± 0.01
2002121817	52627.208	13.40	...	13.06	13.67	...	13.37± 0.43
2002122215	52631.125	13.89	12.90	13.24	13.28	12.95	13.09± 0.19
2002122408	52632.833	13.83	...	13.10	13.62	...	13.36± 0.37
2002122810	52636.917	13.71	...	13.21	...	13.34	13.28± 0.09
2002123118	52640.250	12.87	...	12.60	12.66	...	12.63± 0.05
2003010307	52642.792	12.53	...	11.85	12.44	...	12.15± 0.42
2003010823	52648.458	13.85	...	13.37	13.78	...	13.58± 0.29
2003011100	52650.500	13.94	...	13.61	13.97	...	13.79± 0.25
2003011515	52655.125	15.65	...	15.02	15.67	...	15.34± 0.46
2003011803	52657.625	15.87	...	15.64	...	15.70	15.67± 0.04
2003012116	52661.167	15.42	...	15.13	15.24	...	15.18± 0.07
2003012518	52665.250	15.49	...	15.08	15.17	14.87	15.04± 0.15
2003012812	52668.000	15.50	...	14.82	...	15.38	15.10± 0.39

Table 2—Continued

Date	JD -2,400,000	PCU0	—RXTE PCU Fluxes ^a —				PCA Flux ^a
			PCU1	PCU2	PCU3	PCU4	
2003020111	52671.958	15.02	...	14.47	14.85	...	14.66± 0.27
2003020508	52675.833	14.42	...	13.82	14.26	...	14.04± 0.31
2003020822	52679.417	15.52	...	13.84	14.33	...	14.09± 0.34
2003021206	52682.750	15.38	...	14.53	15.06	...	14.80± 0.38
2003021309	52683.875	14.99	...	14.49	...	...	14.49± 0.29
2003021412	52685.000	15.08	14.52	14.34	...	...	14.43± 0.13
2003021510	52685.917	15.83	3.99	14.82	...	...	14.82± 0.15
2003021612	52687.000	15.29	...	14.58	14.92	...	14.75± 0.24
2003021715	52688.125	15.09	...	14.37	...	...	14.37± 0.15
2003021817	52689.208	15.20	...	14.38	15.11	...	14.74± 0.52
2003021913	52690.042	15.61	...	14.49	...	...	14.49± 0.13
2003022006	52690.750	15.29	...	14.80	15.45	...	15.12± 0.45
2003022106	52691.750	15.56	...	15.13	15.41	...	15.27± 0.20
2003022204	52692.667	15.59	14.84	15.05	...	...	14.94± 0.15
2003022304	52693.667	15.13	...	15.28	...	...	15.28± 0.15
2003022412	52695.000	15.57	...	15.34	15.50	...	15.42± 0.12
2003022512	52696.000	15.99	...	15.70	...	...	15.70± 0.16
2003022603	52696.625	15.65	...	15.19	...	15.40	15.30± 0.15
2003022710	52697.917	18.22	14.39	15.30	15.12	...	14.94± 0.48
2003022800	52698.500	16.43	...	15.85	16.00	15.91	15.92± 0.07
2003030100	52699.500	15.92	15.21	15.58	16.04	15.53	15.59± 0.34
2003030213	52701.042	16.48	...	15.79	15.68	...	15.73± 0.07
2003030313	52702.042	16.92	15.55	15.83	16.23	16.06	15.91± 0.29
2003030410	52702.917	17.20	16.34	16.09	16.43	16.46	16.33± 0.17
2003030411	52702.958	17.20	16.34	16.09	16.43	16.46	16.33± 0.17
2003030513	52704.042	17.70	16.95	16.87	17.56	...	17.13± 0.38
2003030612	52705.000	17.84	...	17.43	17.75	...	17.59± 0.23
2003030710	52705.917	17.14	...	17.18	17.41	...	17.29± 0.16
2003030711	52705.958	17.14	...	17.18	17.41	...	17.29± 0.16
2003030808	52706.833	17.58	...	17.08	17.42	17.08	17.19± 0.20
2003030909	52707.875	17.10	16.09	16.57	17.01	16.70	16.59± 0.38
2003031009	52708.875	16.49	...	16.38	16.50	...	16.44± 0.09
2003031118	52710.250	16.78	...	16.44	16.51	...	16.48± 0.05
2003031211	52710.958	16.89	...	16.66	16.70	...	16.68± 0.03
2003031313	52712.042	17.06	...	16.69	16.66	...	16.68± 0.02
2003031416	52713.167	16.90	...	16.77	16.92	...	16.85± 0.11
2003031512	52714.000	16.95	...	16.42	16.57	...	16.49± 0.10
2003031607	52714.792	16.46	...	16.30	...	16.28	16.29± 0.01
2003031713	52716.042	15.84	...	16.10	14.93	15.22	15.42± 0.61
2003031808	52716.833	16.25	...	16.23	16.66	...	16.45± 0.31
2003031911	52717.958	16.26	15.65	16.14	...	...	15.90± 0.35
2003032011	52718.958	16.77	...	16.37	15.80	...	16.09± 0.41
2003032109	52719.875	16.20	...	16.08	16.23	...	16.16± 0.11

Table 2—Continued

Date	JD -2,400,000	— <i>RXTE</i> PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2003032213	52721.042	16.99	...	16.27	16.57	...	16.42± 0.22
2003032308	52721.833	16.68	...	16.41	16.37	16.24	16.34± 0.09
2003032413	52723.042	16.44	...	16.45	16.61	16.19	16.42± 0.21
2003032513	52724.042	16.47	...	16.27	16.33	16.11	16.24± 0.11
2003032612	52725.000	17.16	16.02	16.58	16.53	...	16.37± 0.31
2003032713	52726.042	17.80	...	16.90	17.28	16.28	16.82± 0.50
2003032811	52726.958	17.51	...	17.78	17.59	...	17.68± 0.13
2003032912	52728.000	21.09	...	20.99	21.48	20.78	21.08± 0.36
2003033010	52728.917	18.97	...	19.02	19.36	...	19.19± 0.24
2003033105	52729.708	19.55	...	19.80	...	...	19.80± 0.21
2003040111	52730.958	19.09	...	18.98	19.60	...	19.29± 0.44
2003040203	52731.625	19.10	...	18.57	19.15	...	18.86± 0.42
2003040309	52732.875	18.92	...	19.02	19.04	...	19.03± 0.01
2003040410	52733.917	19.34	...	19.01	19.57	...	19.29± 0.39
2003040508	52734.833	19.60	...	19.47	19.43	...	19.45± 0.02
2003040611	52735.958	20.12	...	19.90	19.65	...	19.77± 0.18
2003040701	52736.542	20.38	19.87	20.22	20.85	20.45	20.35± 0.41
2003040804	52737.667	20.89	...	20.55	...	...	20.55± 0.18
2003040902	52738.583	20.83	...	20.58	20.79	...	20.68± 0.14
2003041005	52739.708	20.82	...	20.67	...	...	20.67± 0.20
2003041100	52740.500	21.35	...	21.38	...	...	21.38± 0.19
2003041204	52741.667	21.28	...	21.04	...	...	21.04± 0.23
2003041205	52741.708	21.30	...	20.93	...	...	20.93± 0.23
2003041301	52742.542	20.95	...	20.73	21.33	...	21.03± 0.43
2003041402	52743.583	20.95	...	20.97	20.66	20.80	20.81± 0.16
2003041502	52744.583	20.23	...	19.68	...	...	19.68± 0.16
2003041608	52745.833	19.49	...	18.58	...	...	18.58± 0.21
2003041703	52746.625	18.89	...	18.83	...	...	18.83± 0.20
2003041801	52747.542	18.39	...	17.82	17.88	...	17.85± 0.05
2003041901	52748.542	17.94	...	17.02	17.71	...	17.37± 0.49
2003042012	52750.000	17.45	...	17.15	17.14	...	17.15± 0.00
2003042105	52750.708	17.04	...	16.84	16.80	...	16.82± 0.03
2003042208	52751.833	16.80	...	15.77	15.97	...	15.87± 0.14
2003042308	52752.833	16.66	...	16.35	...	...	16.35± 0.17
2003042406	52753.750	16.75	...	16.04	...	...	16.04± 0.21
2003042512	52755.000	18.24	...	18.16	18.13	18.01	18.10± 0.08
2003042608	52755.833	19.88	...	19.96	19.25	19.02	19.41± 0.49
2003042708	52756.833	20.85	19.38	20.73	20.73	...	20.28± 0.78
2003042806	52757.750	21.34	20.61	21.37	21.13	20.75	20.97± 0.35
2003042908	52758.833	22.86	21.65	22.77	23.11	...	22.51± 0.76
2003043007	52759.792	23.52	22.56	23.10	23.66	22.96	23.07± 0.45
2003050107	52760.792	24.30	...	24.51	24.82	24.38	24.57± 0.23
2003050208	52761.833	24.40	23.30	24.30	24.72	24.18	24.13± 0.59

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2003050307	52762.792	26.77	25.61	26.36	26.44	...	26.14± 0.45
2003050412	52764.000	22.92	22.38	22.96	23.03	...	22.79± 0.36
2003050508	52764.833	21.21	...	21.20	20.90	20.63	20.91± 0.28
2003050605	52765.708	20.10	...	19.65	19.50	...	19.58± 0.11
2003050708	52766.833	18.79	...	18.63	19.02	17.99	18.55± 0.52
2003050801	52767.542	18.52	17.66	18.23	18.42	...	18.10± 0.40
2003050802	52767.583	18.52	17.66	18.23	18.42	...	18.10± 0.40
2003050904	52768.667	18.50	17.30	17.59	18.11	...	17.67± 0.41
2003051000	52769.500	17.73	...	18.09	18.34	...	18.21± 0.18
2003051105	52770.708	19.11	...	18.95	18.45	...	18.70± 0.36
2003051203	52771.625	19.85	...	19.66	...	...	19.66± 0.20
2003051308	52772.833	19.96	19.16	19.61	20.00	19.39	19.54± 0.36
2003051309	52772.875	19.96	19.16	19.61	20.00	19.39	19.54± 0.36
2003051407	52773.792	20.34	19.43	19.84	20.48	19.90	19.91± 0.43
2003051507	52774.792	20.59	...	20.51	20.62	19.63	20.25± 0.54
2003051600	52775.500	20.89	...	20.19	...	20.19	20.19± 0.00
2003051706	52776.750	21.15	...	21.56	21.23	20.93	21.24± 0.32
2003051803	52777.625	21.79	...	21.68	22.07	21.47	21.74± 0.30
2003051901	52778.542	21.45	...	21.62	21.03	20.86	21.17± 0.40
2003052007	52779.792	21.23	16.88	20.75	21.45	...	19.69± 2.46
2003052108	52780.833	21.47	...	21.19	21.33	20.76	21.09± 0.29
2003052202	52781.583	20.94	...	20.53	21.01	20.53	20.69± 0.28
2003052303	52782.625	22.18	...	22.69	...	...	22.69± 0.21
2003052400	52783.500	23.43	20.33	24.29	22.60	...	22.41± 1.98
2003052401	52783.542	23.45	20.24	24.17	22.54	...	22.32± 1.98
2003052500	52784.500	25.44	...	25.30	25.75	...	25.53± 0.32
2003052606	52785.750	26.98	...	27.22	27.02	...	27.12± 0.14
2003052706	52786.750	25.78	...	25.86	...	...	25.86± 0.22
2003052805	52787.708	23.63	...	23.73	22.53	...	23.13± 0.84
2003052905	52788.708	20.80	...	20.35	...	...	20.35± 0.21
2003053006	52789.750	22.17	...	19.93	18.07	17.73	18.58± 1.18
2003053103	52790.625	19.95	...	20.03	18.12	...	19.08± 1.35
2003060107	52791.792	19.64	...	18.89	18.91	18.57	18.79± 0.19
2003060205	52792.708	19.61	...	18.99	18.70	18.23	18.64± 0.38
2003060308	52793.833	19.16	...	18.69	18.67	...	18.68± 0.01
2003060408	52794.833	21.35	...	20.43	20.12	19.42	19.99± 0.52
2003060503	52795.625	19.32	...	19.48	19.78	19.08	19.45± 0.35
2003060600	52796.500	20.43	...	18.00	17.82	...	17.91± 0.13
2003060700	52797.500	13.22	...	12.67	13.03	...	12.85± 0.25
2003060908	52799.833	13.23	...	12.71	13.41	12.96	13.03± 0.36
2003060909	52799.875	13.25	...	12.59	13.34	13.08	13.00± 0.38
2003061008	52800.833	12.27	9.95	10.04	10.13	...	10.04± 0.09
2003061106	52801.750	12.53	11.77	11.78	11.86	...	11.80± 0.05

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2003061205	52802.708	16.90	14.71	14.61	14.82	...	14.71± 0.11
2003061304	52803.667	17.74	...	17.61	17.19	...	17.40± 0.30
2003061405	52804.708	21.26	...	20.26	20.45	...	20.35± 0.13
2003061504	52805.667	21.45	...	21.12	21.15	...	21.14± 0.02
2003061606	52806.750	16.36	...	16.08	15.97	15.68	15.91± 0.21
2003061714	52808.083	11.31	10.78	10.83	...	...	10.80± 0.04
2003061805	52808.708	9.65	8.83	8.91	8.73	8.46	8.73± 0.20
2003061908	52809.833	8.13	...	7.29	7.38	...	7.34± 0.06
2003062003	52810.625	7.09	...	6.28	6.29	...	6.29± 0.01
2003062107	52811.792	6.92	...	6.49	6.69	...	6.59± 0.14
2003062201	52812.542	6.74	...	6.04	6.49	...	6.27± 0.32
2003062305	52813.708	5.36	...	4.57	4.83	...	4.70± 0.18
2003062400	52814.500	4.50	...	3.72	3.54	...	3.63± 0.12
2003062506	52815.750	3.60	...	2.90	3.06	...	2.98± 0.12
2003062605	52816.708	3.86	...	3.24	3.48	...	3.36± 0.17
2003062705	52817.708	3.23	...	2.36	2.61	...	2.49± 0.18
2003062802	52818.583	1.80	...	0.97	1.14	...	1.05± 0.12
2003062903	52819.625	1.61	0.90	0.36	0.51	...	0.59± 0.28
2003062904	52819.667	1.61	0.90	0.36	0.51	...	0.59± 0.28
2003063009	52820.875	1.84	1.10	0.47	0.41	...	0.66± 0.38
2003070107	52821.792	1.53	...	0.72	0.34	...	0.53± 0.27
2003070208	52822.833	1.47	...	0.82	0.69	...	0.75± 0.09
2003070302	52823.583	1.20	...	0.59	0.59	...	0.59± 0.00
2003070400	52824.500	1.71	...	0.49	0.63	...	0.56± 0.09
2003070509	52825.875	1.67	...	0.65	0.92	...	0.78± 0.19
2003070607	52826.792	1.86	...	0.66	0.76	0.66	0.69± 0.05
2003070707	52827.792	1.64	1.31	1.12	1.07	...	1.16± 0.13
2003070805	52828.708	1.82	...	0.48	0.68	0.43	0.53± 0.13
2003070907	52829.792	1.37	...	0.66	...	...	0.66± 0.15
2003070908	52829.833	1.39	...	0.54	...	...	0.54± 0.15
2003071001	52830.542	1.56	0.96	0.31	0.12	...	0.46± 0.44
2003071102	52831.583	1.61	...	0.70	0.60	...	0.65± 0.07
2003071211	52832.958	8.21	...	0.88	0.95	...	0.91± 0.05
2003071306	52833.750	1.90	...	0.87	0.89	...	0.88± 0.01
2003071403	52834.625	1.51	...	0.45	0.64	0.50	0.53± 0.10
2003071504	52835.667	1.56	...	0.68	0.85	...	0.77± 0.12
2003071610	52836.917	58.68	...	1.04	1.63	...	1.34± 0.41
2003071702	52837.583	1.24	...	0.49	0.56	...	0.52± 0.05
2003071800	52838.500	1.81	...	0.21	0.65	...	0.43± 0.30
2003071901	52839.542	1.67	...	0.64	0.70	...	0.67± 0.04
2003071923	52840.458	1.40	...	0.02	0.26	...	0.14± 0.17
2003072100	52841.500	1.78	...	0.66	0.84	0.52	0.67± 0.16
2003072122	52842.417	1.20	2.07	1.81	2.23	...	2.04± 0.21

Table 2—Continued

Date	JD -2,400,000	PCU0	—RXTE PCU Fluxes ^a —				PCA Flux ^a
			PCU1	PCU2	PCU3	PCU4	
2003072310	52843.917	2.45	...	0.63	0.71	...	0.67± 0.06
2003072408	52844.833	3.40	1.47	0.69	0.81	...	0.99± 0.42
2003072507	52845.792	4.11	...	0.46	0.54	...	0.50± 0.06
2003072605	52846.708	5.41	...	0.58	...	...	0.58± 0.16
2003072712	52848.000	2.67	...	1.83	1.39	...	1.61± 0.31
2003072803	52848.625	1.52	...	0.68	...	...	0.68± 0.16
2003072904	52849.667	12.08	...	0.84	0.90	...	0.87± 0.05
2003073000	52850.500	1.33	...	0.66	0.58	...	0.62± 0.06
2003073102	52851.583	4.35	...	0.73	...	...	0.73± 0.16
2003080103	52852.625	4.73	...	0.72	0.95	0.72	0.80± 0.13
2003080206	52853.750	2.70	...	0.94	0.87	...	0.91± 0.05
2003080302	52854.583	5.67	...	2.19	1.91	...	2.05± 0.20
2003080404	52855.667	2.41	...	1.24	1.37	...	1.31± 0.10
2003080505	52856.708	2.11	...	1.07	...	...	1.07± 0.15
2003080606	52857.750	2.15	...	1.14	...	...	1.14± 0.15
2003080704	52858.667	1.78	...	0.97	...	...	0.97± 0.14
2003080801	52859.542	2.43	...	0.88	1.19	...	1.04± 0.22
2003080900	52860.500	2.32	...	1.36	...	...	1.36± 0.14
2003081000	52861.500	2.04	...	1.29	...	...	1.29± 0.12
2003081100	52862.500	1.70	...	1.02	...	...	1.02± 0.15
2003081203	52863.625	1.50	...	0.96	...	...	0.96± 0.16
2003081302	52864.583	1.52	...	0.89	...	...	0.89± 0.15
2003081403	52865.625	1.81	...	0.98	...	...	0.98± 0.14
2003081501	52866.542	1.43	...	0.98	1.32	...	1.15± 0.24
2003081521	52867.375	2.06	...	0.96	...	...	0.96± 0.15
2003081701	52868.542	1.40	...	1.05	1.23	...	1.14± 0.13
2003081804	52869.667	1.88	...	1.14	1.01	...	1.07± 0.09
2003081907	52870.792	1.91	...	0.79	...	...	0.79± 0.20
2003082006	52871.750	1.97	...	0.79	...	...	0.79± 0.20
2003082103	52872.625	1.91	...	1.05	0.88	0.72	0.88± 0.17
2003082204	52873.667	2.17	...	0.70	0.69	...	0.70± 0.00
2003082305	52874.708	1.78	...	0.90	1.04	...	0.97± 0.10
2003082404	52875.667	1.93	...	0.98	1.05	...	1.02± 0.05
2003082502	52876.583	1.71	...	0.99	0.93	...	0.96± 0.04
2003082603	52877.625	1.95	...	0.89	0.92	...	0.91± 0.02
2003082701	52878.542	1.83	...	0.87	1.11	...	0.99± 0.17
2003082702	52878.583	1.83	...	0.87	1.11	...	0.99± 0.17
2003082805	52879.708	1.00	...	0.73	...	...	0.73± 0.15
2003082903	52880.625	0.77	...	0.86	0.98	...	0.92± 0.08
2003083003	52881.625	1.77	...	0.77	0.90	...	0.83± 0.10
2003083023	52882.458	2.07	...	1.09	1.19	...	1.14± 0.07
2003083101	52882.542	1.69	...	0.93	0.85	...	0.89± 0.06
2003090105	52883.708	1.59	...	0.61	0.63	...	0.62± 0.01

Table 2—Continued

Date	JD –2,400,000	— <i>RXTE</i> PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2003090205	52884.708	2.01	...	0.89	0.79	...	0.84± 0.07
2003090304	52885.667	1.82	...	1.02	1.07	...	1.04± 0.04
2003090305	52885.708	1.84	...	0.89	0.98	...	0.94± 0.06
2003090403	52886.625	2.75	...	1.06	1.32	...	1.19± 0.18
2003090502	52887.583	1.87	...	0.87	1.23	...	1.05± 0.25
2003090523	52888.458	2.67	...	1.20	1.31	...	1.25± 0.08
2003090622	52889.417	2.54	...	1.12	1.45	...	1.29± 0.23
2003090623	52889.458	2.55	...	1.00	1.35	...	1.17± 0.25
2003090801	52890.542	2.52	...	1.56	1.41	...	1.48± 0.11
2003090901	52891.542	2.69	...	1.80	1.71	...	1.75± 0.07
2003091002	52892.583	3.31	...	1.99	1.84	...	1.91± 0.10
2003091103	52893.625	15.14	...	2.27	2.61	...	2.44± 0.24
2003091201	52894.542	5.52	...	2.79	...	...	2.79± 0.15
2003091202	52894.583	5.54	...	2.67	...	...	2.67± 0.15
2003091306	52895.750	3.97	...	3.16	...	...	3.16± 0.16
2003091507	52897.792	4.36	...	3.57	3.62	...	3.60± 0.03
2003091602	52898.583	10.21	...	4.30	4.10	...	4.20± 0.14
2003091702	52899.583	4.78	...	3.71	4.20	...	3.96± 0.34
2003091801	52900.542	7.12	...	4.56	...	4.04	4.30± 0.36
2003091903	52901.625	6.53	...	4.73	4.76	...	4.75± 0.02
2003092002	52902.583	6.99	...	4.84	...	...	4.84± 0.16
2003092200	52904.500	8.18	...	5.73	...	...	5.73± 0.17
2003092301	52905.542	7.10	...	6.50	...	...	6.50± 0.16
2003092400	52906.500	6.77	...	6.40	...	...	6.40± 0.17
2003092423	52907.458	6.99	...	6.46	...	...	6.46± 0.17
2003092600	52908.500	7.07	7.23	6.96	...	...	7.09± 0.19
2003092701	52909.542	7.47	...	7.36	...	...	7.36± 0.17
2003092801	52910.542	7.75	...	7.18	...	...	7.18± 0.17
2003092901	52911.542	7.69	...	7.14	...	...	7.14± 0.17
2003093004	52912.667	7.92	...	7.36	...	...	7.36± 0.17
2003100100	52913.500	7.88	...	7.81	...	...	7.81± 0.17
2003100202	52914.583	7.92	...	8.21	...	...	8.21± 0.35
2003100223	52915.458	8.28	...	7.99	...	...	7.99± 0.14
2003100400	52916.500	8.30	...	7.86	7.78	...	7.82± 0.06
2003100500	52917.500	8.10	...	7.92	...	...	7.92± 0.16
2003100601	52918.542	8.44	...	7.93	8.09	...	8.01± 0.11
2003100701	52919.542	8.23	...	7.96	8.04	...	8.00± 0.06
2003101004	52922.667	8.48	...	8.25	8.35	...	8.30± 0.07
2003101311	52925.958	8.70	...	8.37	8.71	...	8.54± 0.24
2003101312	52926.000	8.73	...	8.25	8.64	...	8.44± 0.28
2003101708	52929.833	9.03	...	8.64	...	...	8.64± 0.19
2003101709	52929.875	9.06	...	8.51	...	...	8.51± 0.19
2003102014	52933.083	8.83	...	8.78	8.99	...	8.88± 0.14

Table 2—Continued

Date	JD -2,400,000	—RXTE PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2003102414	52937.083	9.47	...	8.84	8.80	...	8.82± 0.03
2003102801	52940.542	8.83	...	8.49	...	...	8.49± 0.17
2003110109	52944.875	8.85	...	8.32	...	...	8.32± 0.18
2003110510	52948.917	8.93	...	8.43	8.70	...	8.56± 0.19
2003110707	52950.792	21.56	...	8.60	8.71	...	8.65± 0.08
2003111118	52955.250	9.37	...	7.85	...	...	7.85± 0.19
2003111419	52958.292	9.82	...	7.80	8.30	...	8.05± 0.35
2003111801	52961.542	8.20	...	8.06	7.77	...	7.92± 0.21
2003112106	52964.750	...	...	7.60	...	...	7.60± 0.17
2003112421	52968.375	8.61	...	7.94	...	...	7.94± 0.17
2003112823	52972.458	9.03	...	8.26	...	...	8.26± 0.17
2003120200	52975.500	9.09	...	8.43	...	...	8.43± 0.18
2003120500	52978.500	8.50	...	8.25	1.80	...	8.25± 0.17
2003120909	52982.875	8.44	...	8.05	8.04	...	8.05± 0.01
2003121219	52986.292	10.12	...	7.78	...	...	7.78± 0.17
2003121520	52989.333	8.38	...	7.54	7.70	...	7.62± 0.12
2003122001	52993.542	9.72	...	8.24	8.80	...	8.52± 0.40
2003122300	52996.500	9.23	...	7.81	...	...	7.81± 0.16
2003122616	53000.167	14.17	...	8.83	...	...	8.83± 0.19
2003122921	53003.375	8.82	...	7.66	...	...	7.66± 0.16
2004010204	53006.667	8.08	7.80	7.77	7.87	...	7.82± 0.05
2004010603	53010.625	8.36	...	7.62	7.83	...	7.72± 0.14
2004010921	53014.375	8.49	...	8.21	8.02	...	8.11± 0.13
2004011306	53017.750	8.19	...	7.89	...	...	7.89± 0.14
2004011600	53020.500	8.44	...	7.71	7.98	...	7.85± 0.19
2004012000	53024.500	8.07	...	7.58	...	...	7.58± 0.21
2004012305	53027.708	8.46	...	7.24	...	7.30	7.27± 0.04
2004012306	53027.750	8.49	...	7.10	...	7.17	7.13± 0.05
2004012604	53030.667	7.82	...	7.15	...	...	7.15± 0.18
2004012605	53030.708	7.85	...	7.01	...	...	7.01± 0.18
2004013013	53035.042	7.87	...	7.44	...	...	7.44± 0.16
2004020223	53038.458	11.58	...	6.93	...	...	6.93± 0.17
2004020605	53041.708	7.50	6.87	7.08	...	...	6.97± 0.15
2004021003	53045.625	7.72	...	7.21	...	...	7.21± 0.20
2004021304	53048.667	7.34	...	7.17	...	...	7.17± 0.17
2004021603	53051.625	8.20	...	6.96	...	...	6.96± 0.17
2004022003	53055.625	7.50	...	7.24	7.17	...	7.20± 0.05
2004022312	53059.000	7.81	...	7.27	...	...	7.27± 0.16
2004022614	53062.083	7.79	...	6.89	...	...	6.89± 0.15
2004030418	53069.250	7.82	...	7.17	7.41	7.10	7.23± 0.16
2004031101	53075.542	9.09	...	6.82	7.09	...	6.95± 0.19
2004031801	53082.542	9.64	...	7.37	...	...	7.37± 0.18
2004032516	53090.167	7.72	...	7.30	...	...	7.30± 0.17

Table 2—Continued

Date	JD –2,400,000	— <i>RXTE</i> PCU Fluxes ^a —					PCA Flux ^a
		PCU0	PCU1	PCU2	PCU3	PCU4	
2004040112	53097.000	7.91	...	7.16	...	...	7.16± 0.18
2004040805	53103.708	7.11	...	6.57	...	...	6.57± 0.19
2004041510	53110.917	7.51	...	6.30	...	...	6.30± 0.18
2004042108	53116.833	6.74	...	6.06	...	...	6.06± 0.15
2004042910	53124.917	7.45	...	6.82	6.88	6.78	6.83± 0.05
2004050514	53131.083	7.22	...	6.61	...	...	6.61± 0.17
2004051323	53139.458	6.94	...	6.17	...	...	6.17± 0.50
2004052012	53146.000	9.04	...	6.09	...	...	6.09± 0.17
2004052723	53153.458	7.00	...	6.02	...	...	6.02± 0.20
2004060308	53159.833	6.65	...	5.72	...	...	5.72± 0.19
2004061013	53167.042	6.32	...	5.22	...	...	5.22± 0.17
2004061709	53173.875	5.55	5.40	5.12	5.20	...	5.24± 0.14
2004062412	53181.000	6.10	...	5.18	4.90	...	5.04± 0.20
2004070111	53187.958	6.04	...	5.27	...	...	5.27± 0.16
2004070723	53194.458	6.13	...	5.47	...	...	5.47± 0.16
2004072220	53209.333	6.49	...	6.06	6.00	...	6.03± 0.04
2004072820	53215.333	6.86	...	5.87	...	...	5.87± 0.13
2004080516	53223.167	6.57	...	5.65	...	...	5.65± 0.17
2004081209	53229.875	5.92	...	5.17	5.29	...	5.23± 0.08
2004081913	53237.042	6.94	...	5.02	...	...	5.02± 0.16
2004082516	53243.167	6.46	...	5.36	...	...	5.36± 0.21
2004090218	53251.250	5.76	...	5.24	...	...	5.24± 0.16
2004090914	53258.083	5.45	...	4.96	...	...	4.96± 0.19
2004091615	53265.125	6.32	...	5.07	5.06	...	5.06± 0.00
2004092221	53271.375	6.20	...	5.13	...	...	5.13± 0.14
2004100711	53285.958	5.90	...	5.12	...	...	5.12± 0.18
2004101421	53293.375	5.97	...	4.95	...	...	4.95± 0.15
2004102111	53299.958	5.56	...	4.60	...	...	4.60± 0.46
2004102619	53305.292	5.70	...	4.89	...	...	4.89± 0.16
2004110220	53312.333	5.80	...	5.01	...	...	5.01± 0.16

^aIn the 2 – 10 keV band, 10^{-11} ergs s⁻¹ cm⁻²; fluxes have not been corrected for absorption.